Haute Games: Innovative Self and Self-Identity Blendings

Maggie Parker

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School of Computing
University of Teesside
Middlesbrough, UK

DECLARATION

While registered as a candidate for the degree of Doctor of Philosophy the author has not been registered for any other award with any other university or institution.

No part of the material in this thesis has been submitted for any degree or other qualification at any other institution by the author or, to the best of her knowledge and belief, by any other person.

The thesis describes the author's original work.

ABSTRACT

This thesis introduces the original idea that it is possible, and productive, to consider the 'blending' of (or deliberate creative combining of methods from) the fields of fine art practice and science practice, using selected empirical research methods to investigate constructions of self and self-identity that emerge between disciplines. In particular, the thesis investigates how the scientific aspects of modern computer games, for instance, can be seen to affect emotional responses from viewers and how those responses are, in turn, affected by the 'blending' of aesthetic concerns with consideration of alternative cognitive processes that induce relaxation to connect with participant-players' self-identities. This process created a method to access cognitive processes, hitherto unexplored by computer-game developers.

This research locates its arguments primarily in and between the disciplines, Art and Game Studies and supports the findings with examples taken from art practice and with theories of Psychology and Gaming. This thesis documents the creation of the author's original hybrid 'art-work-game', known as 'Star World'. It describes the process of 'Star World's' creation, with analysis of the efficacy of this environment as a space where the mapping of narrative, and where perceptual and interactive 'blendings' of self and self-identity were employed and tested, with both qualitative and empirical studies of the experiences and perceptions of participant-players. The research focuses on how the distinctive abstract environment, 'Star World', affords and facilitates personal expression and interaction for computer-game players. It reveals specific cognitive processes undergone by participant-players; evidence that supports and validates the conjecture that participant-players use personal frames of reference when navigating, exploring and interpreting computer games. Teach-back protocols and their impact are shown to improve the interactivity and immersive potential of the environment.

Overall, this thesis classifies 'haute game' rules that are formulated to identify virtual environments creating unique, alternative 'blendings' with participant-players and assembles a framework for developers to pursue, when producing original computer-game genres. It offers an innovative case study of value to future scholars of Game Studies, as well as to game developers, with cautionary examples provided to assist in dealing with situations where emotional states are accessed by game play. This thesis highlights the potential of interactive art and game design to produce beneficial outcomes for its participant-players, moreover, it demonstrates, with empirical evidence, the effect of the virtual environment on its participant-players.

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Finally, and most of all, I wish to thank my family for their support and encouragement - especially my husband, Michael Parker. Without him, I would not have been able to attempt this journey of scholarship.

AUTHOR'S STATEMENT

I am a professional artist, first and foremost, and have chosen to make my original contribution in the discipline of Computer Science, specifically in the field of Game Studies, because I see a real need to inform both the practice and theory of Game Studies with an artistic aesthetic and an understanding of the impact of gaming on the psychological and emotional states of players or participants.

For me, creative practice is a non-verbal experience. It involves a different kind of thinking. I believe that, by engaging in play, access to emotional and cognitive experience is enabled. I still appreciate and engage with traditional mediums and methods of producing imagery, for example, printmaking and painting; however, I am more concerned with virtual space. I argue that virtual space, as a medium, is both powerful and engaging; a 'meaningful space'. Virtual space, the place that exists on the other side of the display screen, is not real. It is a symbolic construction; virtual space is defined and experienced through interfaces and only exists in the mind of the person, or persons, who engage with that constructed space.

I am interested in the possibility that imagery, aesthetics and methods to interact with self and self-identity, can be created in this virtual reality, contained within these electronic screen representations, or even beyond them. Computer games interest me as a medium for exploring the possibilities of this virtual space. Inspired by the possibilities of this interactive media, within my art practice, I attempt to interpret reality, by appropriating game metaphors, design principles and core technologies for alternative kinds of art-related content that create abstract situations within these spaces, to enable engagement with the viewer. Sometimes, when playing a game, I would like to have the facility to be able to relax, at some point, in game play; take time to have a look around, enjoy the scenery, and engage with the space created by the game designers, while appreciating the artwork and design of the environment.

Querying why we have to complete tasks in every game, I perceived that there was, unquestionably, room for alternative game interaction that generated cognitive possibilities, to provide alternative and beneficial outcomes for players. This gave rise to the notion of creating a game environment, where time to 'look' and interact with abstraction and unreal virtual worlds, enables the creation of personal self-narrative, as the objective. This objective would, I argue, allow time and space for players to blend

with their own internal dialogue and create a relaxed mental blending with self and self-identity. Introducing this type of game genre into our lives means that games can enable self-identity to become blurred.

Investigating how these worlds are navigated and constructed is an augury, not only for the artist, but for the field of game studies. How a connection is made with a viewer and how self and self-identity are negotiated, to access and blend with the 'strange space' that allows connections to be made, is a central concern of my practice. Art pieces, previously exhibited in galleries, enabled the formulation of dialogue between the piece and the viewer, creating a connection. Viewers are facilitated to engage with their self and self-identity that generate a unique blend. The hybrid nature of my art practice creates work, utilising both traditional and non-traditional media and has involved the creation of conceptually based objects and installations. Within my art practice, I create virtual worlds, with their own reality, rules and behaviours. For me, as an artist, these worlds can provide glimpses, insights and moments impossible in any other medium and these methods are also important for future game-research. The original artwork I created, 'Star World', became an amalgam, in the sense that it fulfilled three functions, primarily as an art-piece, and secondly, as an empirical test-bed, and, thirdly, virtual space, became the medium I use to explore my art-practice.

I am resolute in my desire to explore the theory that truly contemplative artwork can be created within the medium of virtual space. The physicality of our modern world is being blurred, as virtual space extends the boundaries of our being. As technology becomes transparent and our world extends, the need for more than just technology will emerge. Creating a seductive, virtual game-space allows viewers access to alternative emotions, spaces and places, both physical and virtual, to stop, be relaxed and meditate with the self; this is a visionary future indeed.

ABBREVIATIONS

2D	Two Dimension[s][al]
3D	Three Dimension[s][al]
DLP	Digital Landscape Playscape
IM	Internet Messaging
POs	Perceptual Opportunities
POMs	Profile of Moods [Questionnaire]
SIT	Self and Identity Transference
VE(s)	Virtual Environment(s)
VR	Virtual Reality

DEFINITION OF TERMS

Blend [Blending]
As defined by the Oxford English Dictionary, the term, 'blend', when used as a verb, means to mix and combine with something else; to form a harmonious combination or part of whole and, as a noun, to create a mixture of different things or people. In an artistic definition, 'to blend' means to combine colours together, to form different mixes. As used within this thesis, blending is used first, to describe the mixing of different fields of study and second, to describe the blending of self and self-identity, created by interacting with a virtual environment, to form an emotional connection with a participant-player's self and self-identity [OED, 1989, *Origin: Norse*].

Haute Game
Haute means 'elegant' or 'high', as defined by the Oxford English Dictionary and used, in this thesis, to describe a computer game that breaks a restrictive pattern of events or behaviour, when game-playing, by creating new opportunities to blend with the game, allowing self and self-identity blending to occur, by alternative and innovative interaction [OED, 1989, *Origin: French*].

Immersion
The definition of immersion, currently in use in game studies, defines and describes computer-game players' interaction with video games and carries the connotation of being particularly engrossing. In this thesis, it is employed to describe the state where players cease to be aware of their physical self. It is frequently accompanied by intense focus, distorted sense of time and effortless action. It involves submitting/yielding, to the seduction of the imagery; to become blissfully unaware of one's surroundings and the passing of time, as one escapes into the game.

Relaxation
The term, relax, means to make or become less tense, anxious, or rigid, to rest from work or engage in a recreational activity, or to make (a rule or restriction) less strict. It originates from the Latin *relaxare*, from, *laxus* 'lax, loose' (Oxford English Dictionary). Relaxation is also a relaxation of efforts, a state or occupation intended to give mental or bodily relief after effort. As defined in this thesis, relaxation is used to describe the computer-game player's physiological and cognitive response after navigation of a virtual environment and the experience of 'being present in the moment'
[OED, 1989, *Origin: Latin*].

Strange Space: Self-Identity Transference
The term 'strange space' describes the unknown area of the brain that activates when self-identity transference occurs. Self-identity transference is the term used to describe activity that occurs, when emotional responses which create emotional connections, are engaged, when viewing images. This allows participant-players to access the 'strange-space' and to transfer part of their self, or, self-identity to 'blend' with virtual space.

Table of Contents

DECLARATION ..... **I**
ABSTRACT ..... **II**
ACKNOWLEDGMENTS ..... **III**
AUTHOR'S STATEMENT ..... **IV**
ABBREVIATIONS ..... **VI**
DEFINITION OF TERMS ..... **VII**
LIST OF FIGURES ..... **XIII**
LIST OF TABLES ..... **XVI**
CHAPTER ONE: **1**
INTRODUCTION **1**
1 OVERVIEW **2**
1.1 INTRODUCTION 2
1.2 STRUCTURE OF THE THESIS 3
1.3 OUTLINE OF MAJOR INFLUENCES 4
1.4 RESEARCH QUESTION 6
1.4.1 Blending Defined 7
1.4.2 Haute Game Defined 8
1.4.3 Strange Space; Self Identity Transference Defined 9
1.5 UNCLUTTERED SPACES 11
1.6 NEW COMMUNICATIONS 11
1.7 RESEARCH SUB QUESTION 1 13
1.7.1 Research Environment 13
1.8 RESEARCH SUB QUESTION 2 13
1.8.1 Creative Interactions 14
1.9 RESEARCH SUB QUESTION 3 15
SUMMARY CHAPTER ONE **16**
CHAPTER TWO: **17**
CONCEPT OF SELF AND SELF-IDENTITY **17**
2 OVERVIEW **18**
2.1 INTRODUCTION 18
2.2 LITERATURE REVIEW: THEORY AND PRINCIPLES 19
2.2.1 Self-Theory 20
2.3 PERCEPTION-BASED REPRESENTATIONS 22
2.3.1 Identity and Memory 22
2.3.2 Mythology and symbolism 24
2.3.3 Self and Consciousness 25
2.4 CURRENT THEORIES: PATTERNS, NEURONS, CLUES 26
2.5 BLENDING: ART PRACTICE-GAME STUDIES 28
2.6 THE CARE PERSPECTIVE 31
2.7 CONCEPT OF SELF AND SELF-IDENTITY 32
2.8 GAME STUDIES: INSERTION OF SELF AND 'SELF-IDENTITY INTO A GAME 34
2.9 HAUTE GAMES: ART GAMES 37
2.10 ART PRACTICE METHODOLOGY: INTERPRETING SELF AND SELF-IDENTITY 40
2.11 IDENTITY FLUIDITY 40
2.12 ART PRACTICE REVIEW 41
2.12.1 Artists and Virtual Space 43
2.12.2 Interaction with Abstraction 45
2.13 MEDIAISM OF ABSTRACTION POSSIBILITIES 46
2.14 SELF: EMOTIONAL RESPONSE 46
SUMMARY CHAPTER TWO **48**

CHAPTER THREE: 49

SELF-IDENTITY: AN EMPIRICAL INVESTIGATION 49

3 OVERVIEW 50

3.1 INTRODUCTION: METHOD & MATERIALS 50
3.1.1 Participants 52
3.1.2 Procedure 52
3.2 RESULTS 54
3.3 DISCUSSION: CARD SORT EXERCISE 59
3.4 PLAYING 59
3.5 MECHANISM–MAGNETISM–MODEL 60
3.6 RELAXATION 61
3.7 STREAM OF THINKING 62
3.8 THE MYTH OF DEMYSTIFICATION: TECHNOLOGY IN A 'KNOWING' WAY 63
3.9 ART PRACTICE AND SCIENCE PRACTICE 64
3.10 DESCRIBING SPACE 68
3.11 COMPUTER-BASED APPROACHES TO FINE ART 70
3.12 PERCEPTUAL OPPORTUNITIES 71
3.13 CHARACTERISING PERCEPTUAL OPPORTUNITIES 72
3.14 INTERACTION AND 'THE FOURTH WALL' 73
3.15 TRANSFORMATION 75
3.16 DIGITAL ART 76
3.17 INTERACTIVITY 77
3.17.1 Participation 77
3.18 ART: EXPLORATION-INVESTIGATION AND PLAY 78
3.19 MYTH OF COMPUTER-GAME PLAYERS 80
3.19.1 Research Sub Question 1 80

SUMMARY CHAPTER THREE 81

CHAPTER FOUR: 83

'STAR WORLD': AN HAUTE GAME 83

4 OVERVIEW 84

4.1 INTRODUCTION 84
4.1.1 Research Sub Question 2 85
4.2 SYSTEM DESIGN 85
4.3 IMPLEMENTATION AND PRACTICAL COMPONENT 91
4.4 LIGHTING WORKFLOW 97
4.5 COMPARISON OF GAMES 99
4.6 OPEN-SPACE ENVIRONMENTS 101
4.7 PARTICIPANT REPEATED FEEDBACK 102
4.8 SPACE 106
4.8.1 Research Sub Question 3 107

SUMMARY CHAPTER FOUR 108

CHAPTER FIVE: 109

EMPIRICAL INVESTIGATION: EXPLORATION AND RELAXATION 109

5 OVERVIEW 110

5.1 INTRODUCTION 110
5.2 COMPUTER GAME MYTHS 111
5.3 METHOD 112
5.3.1 Research Design 112
5.3.2 Participants 113
5.3.3 Materials and Equipment 113
5.3.4 Consent 114
5.3.5 Initial Testing 114
5.3.6 Procedure 115
5.3.6.1 Relaxation Exercise 115

5.3.6.2 Navigation Exercise 120
5.4 RESULTS 121
5.4.1 Experience of the Relaxation Exercise 121
5.4.2 Summary of 5.3.1 124
5.4.3 Mood 124
SUMMARY CHAPTER FIVE 128
CHAPTER SIX: 129
TEACH-BACK RESULTS 129
6 OVERVIEW 130
6.1 INTRODUCTION 130
6.2 MOVEMENT 131
6.3 EMOTIONS 132
6.4 ENVIRONMENT 133
6.5 ABSTRACT OBJECTS 135
6.6 COLOURS 137
6.7 ABSTRACT CONCEPTS 137
6.8 SOUNDS 137
6.9 RELAXATION 138
6.10 INDIVIDUAL PARTICIPANT'S EXPERIENCE 138
6.10.1 Participant 4 139
6.10.2 Participant 5 142
6.10.3 Participant 11 144
6.10.4 Participant 28 146
6.11 CONCLUSIONS 149
SUMMARY CHAPTER SIX 151
6.12 RESEARCH QUESTION 151
CHAPTER SEVEN: 153
ABSTRACT ART AND ALTERNATIVE GAME DESIGN 153
7 OVERVIEW 154
7.1 INTRODUCTION: ABSTRACT ART AND ARTISTS 154
7.2 ABSTRACT PATTERNS AND THEIR USEFULNESS 155
7.3 ABSTRACT PATTERNS AND IMMERSION 156
7.4 HOW DO WE DISSECT THESE CODES? 160
7.5 ATTRACTORS 162
7.6 PUZZLES 162
7.7 CHANGE OF SELF 166
7.8 'GAME MODDING' 167
7.9 ARTISTIC ENGAGEMENT AND INFLUENCE 168
7.10 ARTIST AND PLAYER 169
7.11 PERSUASION 171
7.12 HUMAN RESPONSE 173
7.13 FLASH OF INSPIRATION AND CONNECTIONS 174
7.14 CONNOTATIONS IN GAMES 175
7.15 ARTISTIC ACTIVITY 179
7.16 ENGAGEMENT AND INTERACTION AESTHETICS 179
7.17 HAUTE COUTURE: HAUTE CUISINE: HAUTE GAMES 183
7.18 STRANGE SPACES 184
SUMMARY CHAPTER SEVEN 186
CHAPTER EIGHT: 187
HAUTE GAME RULES 187
8 OVERVIEW 188
8.1 INTRODUCTION 188

8.2 COMBINATIONS 189
8.3 HAUTE GAME RULES: 'STAR WORLD' 191
8.4 CREATIVITY AND SCIENTIFIC EMPIRICISM 194
8.5 METHODS 196
8.6 ARTISTS SCIENTISTS AND PLAY 197
8.7 ENGAGEMENT 198
8.8 ABSTRACT CONCEPTS 199
8.9 DEVELOPMENT OF HAUTE GAMES 200
8.10 ALERT AND RELAXED VERSUS ALERT AND READY TO DEFEND 201
8.11 TRANSFORMING GAMES 202
8.12 FUNDAMENTAL PHYSICS: SCIENCE AND ART 203
8.13 TRANSFORMATION OF SPACE SELF-IDENTITY 'GREIG GALLERY' 206
8.14 CREATING A FAVOURABLE ENVIRONMENT 207

SUMMARY CHAPTER EIGHT 209

CHAPTER NINE: 211

CONCLUSIONS AND FUTURE WORK 211

9 OVERVIEW 212

9.1 INTRODUCTION 212
9.2 SUMMARY OF MAIN FINDINGS 212
9.3 CONTRIBUTION TO KNOWLEDGE 213
9.3.1 Research Sub Question 1 215
9.3.2 Research Sub Question 2 217
9.3.3 Research Sub Question 3 220
9.4 LIMITATIONS OF THE STUDY 220
9.4.1 Design for Experimentation 221
9.4.2 Physiological Measures 221
9.4.3 Sound Possibilities 221
9.5 FUTURE RESEARCH 222
9.5.1 Haute Games 223

CONCLUSIONS 226

REFERENCES 230

APPENDICES

I. POMs Questionnaire

II. Protocol Consent Form

III. Protocol Structure Breathing component

IV. Protocol Structure 'Star World' Navigation

V. Protocol Structure Participant Transcript

VI. Physiological Measurements

VII. Published Work

A. "Working with the Community using Digital Manipulation Software"

B. "Alert and Ready to Defend"

C. Digital City Fellows Exhibition Catalogue

D. Playful Subjects

E. "Veduta Ideata"

F. "Game with a Purpose"

G. Women in Games International Conference, Texas, USA 2006 (Microsoft)

H. Poster Presentation

I. "Game-like art/Art-like game: Reflections of a Star World in a StarGlass"

J. "Digital Art Research, or "I Can't See the Image for the Words"

K. "'Haute Cuisine', 'Haute Couture', 'Haute Games'"

LIST OF FIGURES

Figure 1 'Strange Space' Digital Image Maggie Parker 2007 10
Figure 2 'History of the Universe' The Office of High Energy Physics 2000 12
Figure 3 'Circularity' Digital Image Maggie Parker 2007 12
Figure 4 Representation of consciousness 17th century (Fludd 1619) 22
Figure 5 Conception of Human Psyche (van den Dungen, 2004-2008) 23
Figure 6 'Hierarchy of needs' Abraham Maslow (AllPsych) 1943 26
Figure 7 Mirror Neurons (Oberman, et al, 2005) 27
Figure 8 'Everyone I Have Ever Slept With 1963–1995' Tracey Emin 1995 32
Figure 9 'Self-Portrait as a Small Bird' Appliquéd blanket Tracey Emin© 2002 32
Figure 10 Imagery from the 'Blue Brain' project (EPFL, 2005) 34
Figure 11 Skinning a picture of a head onto a 3D model 'Digimask' Screenshot 35
Figure 12 'Myself' in Digital Environment 'Digimask' Screenshot 35
Figure 13 Alternative looks (UK Hairdressers, 2005) 36
Figure 14 'Untitled' Cindy Sherman 2000 36
Figure 15 'EYETOY' Sony 2005 37
Figure 16 'Samorost' Artificial 2007 39
Figure 17 'Pac-Man' and 'Space Invader' 2007 40
Figure 18 'Osmose' Char Davies 1995 42
Figure 19 'Osmose' Char Davies 1995 42
Figure 20 'Archipel Sauvage IV' Joan Miro 1970 45
Figure 21 'Self-Portrait' Marek Chmielewski 2004 51
Figure 22 'The Great Hall of the Bulls' The Caves of Lascaux (cult.gouv.fr) 2006 63
Figure 23 'Fur-Lined Tea-Cup' Meret Oppenheim 1936 68
Figure 24 'Nude Descending a Staircase No 2'. Marcel Duchamp 1912 oil, 58 x 35 68
Figure 25 'The Bride Stripped Bare by Her Bachelors, Even' Marcel Duchamp 1923 69
Figure 26 'Pac-Man' Original Game interface 'Halo' game environment 2007 71
Figure 27 'Perceptual Opportunities' Clive Fencott 2004 72
Figure 28 'Star World' 'Hexagons' Maggie Parker © 2005 73
Figure 29 'Shirley Valentine' Pauline Collins 1989 74
Figure 30 'Star World' Screenshot Maggie Parker © 2005 86
Figure 31 'Star World' Screenshot Maggie Parker © 2005 87
Figure 32 'Lode Runner' Screenshot (Assage, 2007) 88
Figure 33 'Sims 2' Screenshot (The Armchair Empire, 2000-2006) 88
Figure 34 'Star World' Screenshot Maggie Parker © 2005 89
Figure 35 'Star World' Screenshot Maggie Parker © 2005 90
Figure 36 Oblate Spheroid 91
Figure 37 'Star World' Construction model Maggie Parker © 2005 92
Figure 38 'Star World' Texture model Maggie Parker © 2005 92
Figure 39 'Star World' Underneath game play area Maggie Parker © 2007 94
Figure 40 Hand-made paper scan 94
Figure 41 'Inside the Eagle Nebula' (APOD) 2004 94
Figure 42 'Star World' Hexagon Shapes Screenshot Maggie Parker © 2005 95
Figure 43 'Star World' Tree shapes Screenshot Maggie Parker © 2005 96
Figure 44 'Star World' Spoken Suggestions Screenshot Maggie Parker © 2005 96
Figure 45 'Star World' Sound pieces Screenshot Maggie Parker © 2005 98
Figure 46 'Autumn Rhythm' Jackson Pollock 1950 102
Figure 47 Texture Test 105
Figure 48 Texture Test 105

Figure 49 ‘Indian World’ Texture Test....105
Figure 50 ‘Second Life’ Character....111
Figure 51 Layout of data collection on arrival showing consent form (script and questionnaire face down)....115
Figure 52 Participant filling in questionnaire data....115
Figure 53 Area for completing questionnaires....116
Figure 54 Area for participation: Relaxation exercise....116
Figure 55 Position of Blinds....117
Figure 56 Physiological Measuring Electrodes Figure 57 Electrode Pads....117
Figure 58 Heart Rate Lead placements Figure 59 GSR Lead placements....118
Figure 60 Recorded physiological data....119
Figure 61 Participants on completion of navigation exercise....121
Figure 62 GSR Bar graph of relaxation exercise....125
Figure 63 POMs Bar graph of relaxation exercise....126
Figure 64 POMs Bar graph for exploration of ‘Star World’....126
Figure 65 ‘Star World’ Screenshot Maggie Parker © 2005....134
Figure 66 GSR Measurement Participant 4....140
Figure 67 GSR Measurement Participant 5....142
Figure 68 GSR Measurement Participant 11....144
Figure 69 GSR Measurement Participant 28....147
Figure 70 ‘Composition IV’ Vasily Kandinsky 1911....155
Figure 71 ‘Inventive Quotient’ Game Advertisement....156
Figure 72 Constructed body shape....158
Figure 73 Figure construction....158
Figure 74 ‘Indian World’ Screenshot Maggie Parker © 2006....159
Figure 75 Underlying Semiotic Structures....159
Figure 76 Human Brain Cortical Column Model János Szentágothai (1912-1994)....161
Figure 77 Can you find the objects?....162
Figure 78 ‘AB See’ Gerhard Richter 1997 (b1932)....164
Figure 79 Wheel Spaces....164
Figure 80 ‘Life drawing’ Maggie Parker © 2005....165
Figure 81 ‘Dream Day’ by Mark Dietrich and Michael Huber Digital Image 2003....167
Figure 82 ‘Arctangent’ Casey Reas 2002....168
Figure 83 ‘Virtual Soundscape’ Mike Oldfield 2003....168
Figure 84 ‘Technosphere’ Jane Prophet 1995....169
Figure 85 ‘World of Warcraft’ Screenshot....170
Figure 86 ‘Vitruvian Man’ Leonardo da Vinci approx 1487....173
Figure 87 ‘A Young Hare’ Albrecht Durer 1502 Watercolour and gouache on paper....173
Figure 88 ‘Rez’ Screenshot....176
Figure 89 ‘Rez’ Screenshot....176
Figure 90 ‘Katamari Damacy’ Katamari ‘clumps’....177
Figure 91 ‘StarGlass’ Virgoan stars (pinkish), the 3 smaller stars (bluish, on left)....178
and a Duchampian object (Étant Donnés) Dew Harrison....178
Figure 92 ‘StarGlass’ Virgo birth sign stars arriving at the Large Glass ready for play.178
Figure 93 ‘Darwinia’ in game Screenshots Courtesy of Vicky Arundel....180
Figure 94 ‘Madrid’ in game Screenshots....181
Figure 95 ‘Moderation’ Zack Booth Simpson 2005....181
Figure 96 ‘Electroplankton’ Toshio Iwai....183
Figure 97 Cyclical Method Maggie Parker © 2004....189
Figure 98 ‘Play/Test’ Digital Image Maggie Parker © 2005....189

Figure 99 ‘Creation’ 194
Figure 100 ‘Invent’ 194
Figure 101 ‘Concept Construction’ 195
Figure 102 ‘Building Concept’ 195
Figure 103 ‘Inspiration’ method 196
Figure 104 ‘Model of Four Elements’ Kolb 1984 200
Figure 105 Interactive Mirrors in Action 203
Figure 106 ‘Star World’ Navigation at ‘edan at Ogden’ exhibition 204
Figure 107 ‘Journey’ Sculpture and garden design by John Robinson1996 206
Figure 108 Greig Gallery (Work shown is by artist Don Carson) 206
Figure 109 Surround Video Projections Mines 2008 208
Figure 110 ‘Art Gallery’ Maggie Parker © 2001 217
Figure 111 ‘The Garden of Earthly Delights’ Hieronymus Bosch 1504 219
Figure 112 ‘Smart Fabric’
Figure 113 Fabric keyboard 222

LIST OF TABLES

Table 1 Art Games 38
Table 2 Number of categories identified by each participant 54
Table 3 Image Sort Cluster Group 1 Participants Descriptions of self-portrait categories 56
Table 4 Results of Image Sort Cluster Group 2 58
Table 5 Characteristics of Murray, 1997 70
Table 6 Object Map 73
Table 7 Comparisons between Games: Courtesy of Dr Alan Hind 100
Table 8 Repeated Experience 'Star World' Digital City Exhibition April 2005 104
Table 9 Question results for Relaxation Exercise. 122
Table 10 GSR for relaxation exercise 124
Table 11 POMS for Relaxation exercise 127
Table 12 POMS for 'Star World' exercise 127
Table 13 Transcript Theme Categorisation 130
Table 14 Themes from teach-back task 131
Table 15 Participant 04: Response to 'Star World' and Relaxation exercise 141
Table 16 Participant 05: Response to 'Star World' and Relaxation exercise 143
Table 17 Participant 11: Response to 'Star World' and Relaxation exercise 145
Table 18 Participant 28: Response to 'Star World' and Relaxation exercise 148
Table 19 Keywords for Shoot 'em up games from the Periodic Table:
Courtesy of Dr P.C. Fencott 160
Table 20 Lifespan Elements Courtesy of Dr P.C. Fencott 160
Table 21 Surprises for Star World 199
Table 22 Art pieces inspired by SPSS Data 228

CHAPTER ONE:
INTRODUCTION

1 OVERVIEW

This chapter discusses the notion of blending empirical investigation, computer science and art practice. It identifies the field of research this thesis is located in and introduces a summary of researchers, artists and writers who are of particular importance in their fields of study and who informed the framework for this thesis. It introduces the main research question and supplementary sub-questions, defines the terms used in the thesis, and provides a brief overview of the thesis structure. The art practice ingredient of this thesis analysis, inspects and studies my continuing journey as a professional artist, progressing my personal artistic development and as such, needs to be discussed and examined using the first person. Empirical research contained in this thesis is written in the formal style normally required for objective scientific research. The macro flow of arguments interweaving with micro flows, in a smooth unification between creativity and logic, is illustrated by the use of "I", when describing artistic methods and the use of formal descriptions when describing empirical investigation.

1.1 INTRODUCTION

This thesis submits original research conducted at the interstices of three academic disciplines Art, Game Studies, and Psychology. The literature review thus discusses a broad range of writings from these fields, focusing on those that best inform this multi-disciplinary thesis. The main field of study is Art; the cognate fields are game studies and psychology; in addition, computer science practices are examined, discussed and explored. In this thesis, it is argued that computer science has enabled the synthesis, or blending, of art and technology. Opportunities available from blending of dissimilar disciplines suggest that this recombination would, I argue, afford unique opportunities to create games to investigate self and self-identity. I am indebted to the authors, artists, philosophers and programmers who have published their speculations, hypotheses and research, which have inspired me to formulate my own original arguments, positioned at unique crossroads between disciplines and between practice and theory. Because of their visual and interactive nature, game environments present new investigative options "resulting in a higher level synthesis, an interpretation" (Gray & Malins, 2004). The synthesis, or blending, of artistic and scientific practice also requires a blending of writing styles. This blending has enabled images to be produced from mathematical formula, including the creation of computer games. The role of computer games and the

psychological states of players who are playing them has been attracting considerable academic investigation, resulting in the growing field of game studies and, as part of this increasing research, this project mixes scientific and artistic practice, blending empirical investigation with personal aesthetic creation and the investigation of imagery, engagement, immersion, and becoming 'present in the moment'.

1.2 STRUCTURE OF THE THESIS

The material in this thesis is organised into nine chapters. Following the introduction in Chapter One, Chapter Two examines how self and self-identity has been investigated and researched by philosophers and scientists. It discusses the function of consciousness and the blending of self and self-identity with the present moment. It provides relevant background information and presents details of previous research. It leads to the question of what artists portray of their self and self-identities when they create a self-portrait and what is understood and communicated to viewers. Chapter Three begins by asking how artists create self-portraits and how self-identity is defined and constructed. It reports on an experiment constructed to test how participants interact with these self-portraits and on participants' responses to the imagery. The chapter continues to consider 'participation' and 'self' in various games. It describes artistic practices and methods leading to the formulation of the first research question which results in the building of an art-narrative environment, 'Star World'. Chapter Four describes the inspiration behind the creation of the virtual interactive environment 'Star World'. As well as being an artist-constructed piece, this environment became multi-functional, having an existence as both an empirical test-bed on which to test viewer's reactions and as a piece of art in its own right. Chapter Five reports the results of an empirical investigation of data collected by examining participants' navigation of the virtual environment 'Star World', in comparison with data collected from participants sitting quietly, concentrating on their breathing for a period of time. Chapter Six continues the investigation of data collected from participants and reports and examines the results from the two experiments described in Chapters Five and Six. Chapter Seven investigates how abstract patterns affect viewer's perception of the world and how abstract or ambiguous shapes are able to define, interact and blend with a player's self-identity, creating 'haute game' creation opportunities. These methods suggest new ways to create games, by observing what people want to see and play and how they can connect in different ways to engage with

different emotions from what they wish to connect to in their real-world self-identities. Chapter Eight formulates the haute-game rules and discusses their potential for computer-game designers. It explains and investigates the combination of scientific and abstract concepts and how this blending could contribute to the development of haute games. It explains how artists create new opportunities to show imagery and describes the relevance of interaction with participants' self and self-identity when viewing imagery. Finally, Chapter Nine summarises the research findings, highlights this author's contribution to knowledge and outlines recommendations for future work.

1.3 OUTLINE OF MAJOR INFLUENCES

Amalgamating different disciplines indicates that this research has an extensive literary review, which coalesces in the investigation of game studies, art-practice, eastern philosophy and empirical research. The work of researchers, artists, writers and philosophers, mentioned in this section, are of particular importance to the formulation of the framework contained within this thesis. From the field of psychology and the study of the 'self' and 'self-identity', authors such as Gaston Bachelard, Immanuel Kant, Sigmund Freud and Carl Gustav Jung paved the way for other philosophers studies, including Roland Barthes, René Descartes, Martin Heidegger and John Locke, which facilitated my exploration and my theory of how the self is constructed when interacting with images in a computer-game environment. I am especially indebted to feminist critics such as Carol Gilligan and Julia Kristeva, as they bring to the research a more inclusive reading of what 'self' and 'self identity' mean. The empirical research contained in this thesis, was inspired by Paul van-Schaik, Carole Gray and Julian Malins, to whom I am indebted to for their dialogue and thoroughness which enabled me to locate my position in this unique study.

Vilayanur S. Ramachandran, Semir Zeki and Antonio R Damasio underpin my research with their theories and empirical results of what occurs when investigating and imaging the brain and how its functions can be mapped. These were combined with my readings of 'chi' and Eastern philosophy, while inspiration and readings from that area included my discussions with Ewan Clayton and Kasuki regarding 'chi' and the possibilities and functions of using meditation as an aid to access self and self-identity. The artwork of W Guanzhong and the writings of Kakuzo Okakura and Stephen Kaplan enabled to

formulate my hybrid art-work-game, 'Star World' with confidence and helped to fulfil my vision of what these environments could become.

Visual inspiration was afforded from artists working with alternative world-views whose work illustrated alternative worlds and abstract visions and included works by Hieronymus Bosch, Amedeo Modigliani, Marcel Duchamp and Jackson Pollock. I am appreciative of the work of Char Davies, Dew Harrison, and Jane Prophet, who brought to digital media alternative aesthetics and innovative interactive possibilities, also the writings of Rita Lauria and Mary Ann Moser, who queried the future possibilities of emotional engagement with the medium and paved the way for future scholars.

In the field of Game Studies, I am indebted to the work of authors such as Clive Fencott, Mihály Csikszentmihalyi and Chris Crawford for their writings, also David Freeman and Nichole Lazarro for their research into emotional responses and play with computer-game players. My many conversations about games as art and their potential to create new alternative blendings with player's 'self' and 'self identity' was also enriched by my conversations and discussions with colleagues and fellow committee members of the Women in Games Conference organisation, who supported me.

I am especially grateful for my conversations with Ernest Adams whose writings about game studies, particularly games and art, have inspired and supported me along this journey. I am indebted to those first programmers and computer-game developers, whose games allowed alternative interactions with computers and the virtual worlds contained within them that are seen in a real-world space. The computer games which inspired this thesis, including the first game I ever bought and played, 'Pong', are too many to be listed. From their initial conception and the original 'Space Invaders', however, up to and including 'Half Life' and 'World of Warcraft' they have prepared me to comprehend the possibilities of this visual and emotional medium.

These people, together with others mentioned in this thesis and included in the general literature review, permitted me to develop my arguments, pose my questions and make my unique contribution to knowledge.

1.4 RESEARCH QUESTION

How can aspects of modern computer games affect emotional responses from players? Could these responses be affected by blending aesthetic concerns that create alternative cognitive processes to induce alternative mood-states, particularly relaxation?

Art is not created in a vacuum and games cannot be played without engagement with the player. "Its process can be impulsive, unpredictable, intuitive, not always logical, and is usually difficult to analyse, interpret and describe" (Stewart, 2003). The methods chosen to investigate this question were the combination of art-practice and empirical research. Art practice and computer science, I argue, or computer science and psychology, for example, would create new metaphors, images and descriptions to add to the creative design of virtual environments. Context develops between three alignments; artwork, audience and content; with the artist transmitting content, then the artwork transmits content in response to what the audience has allowed or not allowed. To evolve the artwork, intellectual engagement can be used to signify place and audience, the work is never so pure that it cannot be used in different ways. Building and exhibiting an art-piece, 'Star World', for exhibition, would be the catalyst for informing the introduction of feedback from an art-practice-based technique. This would allow the introduction of formal, empirical methods traditionally employed when embarking on a computer-science-based thesis. What working methods could artists introduce into the field of game studies that would create alternative cognitive processes to induce alternative mood states? The field of game studies has begun to formulate theories regarding players' communication within the medium of computer games and this necessitates the introduction of terms that describe this interaction. Several terms have become widely used to describe how interaction occurs with computer games that have started to fulfil the promise of greater representation of real-world spaces on high-spec platforms such as 'Play Station 3' and 'Xbox360', including immersion and interaction. This thesis introduces several new descriptive terms that are defined in the next few sections. It is said that games are an art form because of their visual nature, but interaction also completes part of this process. Why do people play games? People report that they play computer games to provide them with entertainment and games differ from watching films because of the interaction possibilities provided by the media. Games are a form of entertainment and imagery through which you can experience diversity and engagement

with another world. Games can also challenge the player mentally with puzzles, or difficult scenarios and adventures. Games and their environments can also be used to investigate the relationship between objects, the meanings attributed to them by players and the way these affect game-play. Game players state that they play games to relax; relaxation, as defined in this thesis, means to make or become less tense, anxious, or rigid. Relaxation is also a relaxation of efforts, a state, or occupation, intended to give mental or bodily relief after effort. Relaxation is used to describe computer-game player's physiological and cognitive response after navigation of a virtual environment and the experience of 'being present in the moment'. Risk-taking has always been the domain of the arts and science; science produces the technology; artists and game designers take risks with software using innovative methods of creating presence, interaction and immersion. Immersion, in this thesis, is defined by game study theory as the state where you cease to be aware of your physical self. It is frequently accompanied by intense focus, a distorted sense of time and effortless action. The term is widely used to describe video games and carries the connotation of being particularly engrossing (Crawford, 2007). These innovative methods combine with game players' self and self-identity, to create new 'self-blendings'. Two major terms, 'blend' or 'blendings' and haute games, are introduced in this thesis. These are defined more fully in the next sections and are woven throughout the main structure of the thesis.

1.4.1 BLENDING DEFINED

The term, blend, as defined by the Oxford English Dictionary, means as a verb to mix and combine with something else to form a harmonious combination or part of a whole and, as a noun, to create a mixture of different things or people. Stafford, (2007) argues for a new understanding of images, not simply as products of mental operations but as "constitutive cognitive processes". She discusses the puzzle of "binding", the process that, in this thesis, has been extended to mean "blending", which we both argue "make visible the invisible ordering of the human consciousness". In calling for art, science, philosophy, and technology to become a single investigation, she is asking for what some artists do, as a matter of course when pursuing their work. In choosing the word 'blend', I argue that the difference between bind and blend is that, 'to bind' (to tie, or fasten tightly, OED 1898) together, is not what happens to participant-players when they interact with the visual images contained within this thesis. To bind implies a rigid structure

tightly controlled, however, when viewing 'Star World', participant-players have free association in their responses to the imagery. In this thesis, this 'blending', of self and self-identity, create a reaction that is physical, emotional, or psychological; which merges diverse materials and emotions together to create a coherent connection with participant-players' self and self-identity. By creating artistic works, artists create tensions between differing fields, crossing and blending boundaries in strange spaces, creating blendings between science and art. These blendings create strange alternative spaces and create narrative and emotional opportunities, which, in turn, create opportunities for immersive and alternative interactions. When artists are given software to 'play with', the perception of virtual spaces can be changed; artistic intervention leads the way towards new interactions and perceptual opportunities. Artists are producing games that push the boundaries of what are perceived to be computer games, producing games that investigate alternative reality scenarios, examples of which are discussed in Chapter Two. The subjective and philosophical nature of self and self-identity formation is still the 'great unknown'. Although neuroscience is beginning to 'map' brain functions, at the moment, there are still unknown areas to investigate. New possibilities allow innovative blendings, which could then be investigated as empirical studies. Several games for sale in the market-place are merely improved versions of original game-themes, for example, the 'Final Fantasy', 'Halo' and 'Doom' series; most risk-taking in the games industry is kept to the minimum, due to huge production costs. Game producers follow the same formulaic production pipeline that they know will succeed in selling computer games, merely adding improved graphics, extra functionality, or new special effects. Unconventional games have a place in the industry as they can take risks denied to the industry due to high production costs. I have classified these unconventional games as 'haute games'.

1.4.2 HAUTE GAME DEFINED

These are games that can investigate, highlight and create new and alternative game genres, by taking risks, which is something artists know intimately and live with every day. One game defined as such in this thesis was 'September 12th' a game created in response to the bombings in America, on September 11th. All ideas must stem from somewhere and fine artists have the passion of their work to generate ideas. 'Couture' means dressmaking, sewing, or needlework and 'haute' means elegant or high, so the

two, combined, imply excellent artistry with the fashioning of garments. This is comparable, I argue, to artists producing alternative games that game companies do not have the time or ideas to implement. These haute games allow the dissemination of ideas throughout the game industry; originality of unique designs are what fine artists also aspire to, sometimes working for years on a piece of artwork. Graphic illustrators often take themes and memes created by fine artists, sometimes subverting this imagery into watered-down accessible imagery, consumed by the general public. In the art-field, every piece of art-work placed for public viewing is a risk, for example, the risk of exposing something the artist wishes to conceal which reveals a part of the artist's self, by producing a self-portrait, the risk of ridicule, for example, at the showing of 'Impression'; critics described the show as "painting created in a state of delirium tremens". There is the risk of hatred, for example, Marcus Harvey's 'Myra', the giant reproduction of the newspaper image of Myra Hindley, constructed with children's handprints. Artists take many different kinds of risk. Creativity should be allowed to be 'risky' and artists have the training to facilitate these risks, which can instigate and investigate unconventional perspectives. These 'risks' or 'experiments' could have the same impact on the game industry as 'Impression' did to the art world, by raising the perception of players and allowing multiplicities of engagement with games. Opening up new possibilities of innovative self-interaction between game studies and computer-game players, allows new opportunities for players to access different areas of narrative and interaction, allowing them to cross the 'strange space', making a connection with alternative 'self-identities'.

1.4.3 STRANGE SPACE; SELF IDENTITY TRANSFERENCE DEFINED

When playing computer games and concentrating solely on the game play, are we losing part of our sense of self and blending with the game imagery and narrative, becoming 'another self' by accessing and crossing a 'strange space'? This connection takes place in the brain within micro-seconds, causing part of participant-players' self and self-identity to enter and become part of that virtual space. It activates personal memories and emotional responses and is defined in this thesis as 'self-identity transference [SIT]. At the time of writing, neuroscience is on the verge of making new discoveries of how the brain processes images. Modern computer games are image-based; the player interacts within a game space that makes connections between brain and imagery. Games place the player within the game space, allowing and inviting the player to combine with the

game space, situation or character, comparable with the blending of part of viewers' self and self-identity when viewing a piece of artwork, stage production, or soap opera. Viewers become immersed in the production and surrender part of their self and self-identities to the character or object. They inhabit the internal self that the artist projects from their internal space into the external world. Although it is difficult to come to a piece of abstract art and view the piece without any tools of interpretation, the act of looking and interpreting the piece in this 'strange space' allows the viewer to interpret the imagery by creating their own internal narrative, based on their memories and experiences, to make further connections and internal descriptions. This viewing of a piece of art, can, I argue, resemble puzzle game interactions. Viewers have to be alert and ready to interact with the artist, to play a game, in this journey into 'Strange Spaces', as shown in Figure 1, immersing and making connections with parts of their self-identity to play with the artist's 'self' as portrayed in the piece of work viewed.

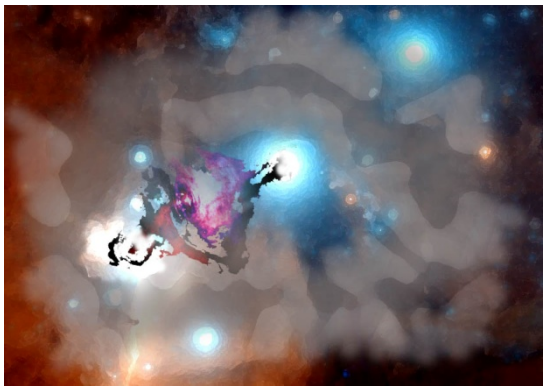


Figure 1 'Strange Space' Digital Image Maggie Parker 2007

What artists do is set up situations to evoke emotional responses from viewers, relating philosophy and theories, utilising and facilitating personal intuition and rigorous perception, to create pieces of work. These theories are endorsed in the work and in the production of the artwork, by construction, response and relation. Artists open our eyes to new ways to see. The impressionists, for example, created new ways to look at paint; Duchamp created connections to investigate 3 and 4-dimensions in space with his piece 'The Large Glass' (1923) while the writings of Bachelard (1964) spanned science, poetry and human consciousness. These unconventional syntheses of perspectives recognise the creativity of the human mind. Logic has its limitations, one of which is to be able to make a 'leap of faith', to make connections otherwise not apparent, but theories help people to make such 'leaps of faith', giving them a structure to start from. The similarities of practice-based research to action research, is an approach known already to

researchers. Action research involves an iterative cycle of plan-act-reflect, with attention paid to both the process and the outcome (Baskerville, 1999; Baskerville & Wood-Harper, 1998; Baskerville & Wood-Harper, 1996; Davison Martinsons & Kock, 2004; Lau, 1999). Creating a piece of digital art, involves a similar cycle of planning, acting and reflecting, with the focus on both process and product (Oates & Parker, 2005).

1.5 UNCLUTTERED SPACES

Uncluttered spaces in images create these strange mind-space opportunities on which can be projected a part of the viewing person's self-identity. Engagement with images activates memories and these memories connect with a viewer's personal identity, in turn triggering reactions. Game environments offer an alternative way of 'viewing' images contained within a monitor or TV screen. Works of art are cognitive devices aimed at the production of rich cognitive effects. Thus, in the light of what is known about human cognition, it can be argued that aesthetic experience is a by-product of the exercise of more fundamental cognitive faculties, such as perception, imagination, love, seduction and so on. Works of art are never grasped directly. Rather, in an aesthetic experience, a subject directly perceives a certain object or event (a canvas, a display of pixels and a series of sounds); this perception gives rise to a cognitive activity of a special, aesthetic type. This cognitive activity makes a connection, allowing the viewer to create a personal dialogue with the piece, inviting further engagement.

1.6 NEW COMMUNICATIONS

Scientific method involves collecting information to test new ideas and to expand knowledge of previous theories. Scientists discover new things that influence the way we think about the world, for example, when physicists explain new ways of investigating how the universe began. They discover something previously not explained or something that overturns previously accepted ideas, such as Einstein's Theory of Relativity or the 'Big Bang' theory of how the universe was created an example of which is shown in Figure 2. This illustrates the history of the universe as known at present.

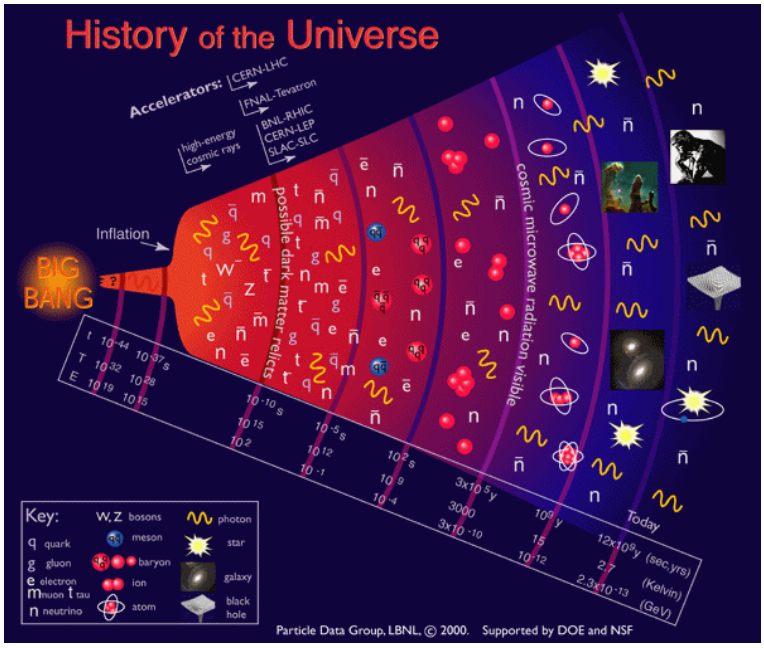


Figure 2 'History of the Universe' The Office of High Energy Physics 2000

These explanations make a contribution to humanity's body of knowledge. Science and art have many ideas and methods in common. In the words of Duchamp, art is also a "wedding of mental and visual reactions and an accumulation of ideas". To create the image in Figure 3, I visualised this model of interactivity between scientific and creative methods.

Figure 3 'Circularity' Digital Image Maggie Parker 2007

Using a 3D package, I created the text, then various modifiers were applied, to give the text a more 3D look. The palette used included variations of soft colours to soften the hard-edged logical 1 + 2 + 3 = 6 mathematical method, creating a binary opposition to connote a soft-edged design, using these colours. The text was extruded and modifiers applied to present a 3D watery spherical effect. Text was inverted; why should it be read left to right? The background (a star map) was then added, as I value the quote by Oscar

Wilde (1854-1900); “We are all in the gutter but some of us are looking at the stars”. Stepping out of an individual comfort-zone and entering into a “magical circle of play as a free and meaningful activity” (Rodriguez, 2006), to try to understand something that is represented in new creative images, creates new opportunities to connect to objects in a different way, inspiring and creating new narrative connections based on notions of self-identity. Viewers can feel insecure when viewing and trying to understand different imagery, but do not understand how to interact with this imagery without accessing internal knowledge. Images are connected to this internal knowledge, to what one knows, personally, and creates an internal self-narrative, in order to make a connection to the piece, to try and understand it. Internal self-dialogue can and very often does deceive one; theory, method and practice can help see past pre-conceptions when one has to try and understand something unfamiliar. Sometimes, when playing games, the avatar presented is not one the player wishes to be, causing them to stop playing the game. If there is no avatar to map a players’ self-identity onto, how do players blend and map objects to their personal self and self-identity? How is this blending process mapped and does this generate unique opportunities when navigating alternative aesthetic spaces? These questions also raise the following sub-question:

1.7 RESEARCH SUB QUESTION 1

Would omitting an avatar enable a player to become relaxed and immersed, enabling the player to blend with the environment, using abstract artefacts to support and invoke a relaxing experience?

1.7.1 RESEARCH ENVIRONMENT

One important insight, by Gombrich (1977), is that innovations in technique and mechanism lead not just to achievements, but to more challenges. An investigation of artists working in the field of virtual environments led me to wonder what methods virtual-environment artists use to combine different fields. This raised the second sub-question;

1.8 RESEARCH SUB QUESTION 2

Could artistic and empirical models of practice be used, to formulate and introduce diverse aesthetics into a computer-game environment?

When Jackson Pollock poured a pot of paint over a canvas on the floor, this process resulted in an impulsive, unpredictable piece of artwork in the beginning, but, as he gained more knowledge through practice, he arrived at a more controlled method. There may be individuals, who cannot communicate between and among fields, but this is not their fault as human beings; generally, it is the problem of individuals who look toward art, or science, from an incomplete perspective and background. Char Davies (2003a) was using her understanding of software and technology to recreate her paintings in an artistic way, using software as a medium. I created an artistic artefact, or environment, using methods of art practice to build an empirical test-bed, on which to experiment and create new data for testing and analysis. Creating this model is, I argue, providing a passageway of delivery to focus on thematic pathways produced artwork and data from the responses of both participants and viewers. Artwork, produced as environment screenshots, was shown at various exhibitions, such as 'edan at Ogden' (2007). This evolving work began by investigating self and self-identity, it led to a cyclical response, which evolved through engagement with empirical investigation, art practice and created meandering wanderings, which engaged and inspired players to blend their personal self and self-identity, thus creating self-narratives within an interactive, non-threatening space.

1.8.1 CREATIVE INTERACTIONS

It is said that the practice of playing a computer game is fun, because it is a continuing creative process, changing time, dimension, space and self. In the last few years, the internet has vastly enhanced our ability to display images to others and we can now think of ourselves, not just as viewers and consumers of images, but as makers and users of them, ourselves. Game studies interest me because computer games, as a form of entertainment, involves particularly multifaceted interactions, using the definition of interaction by Rosanne Stone (1996). "Interaction is a mutual and simultaneous activity by more than one participant, usually working toward some goal". In this thesis, interaction comprises participant and game, the 'other' 'participant(s)' being the computer screen, monitor and mouse, or controller. This leads to the third sub-question investigated in this thesis:

1.9 RESEARCH SUB QUESTION 3

Could an artist-created environment, 'Star World', have alternative identities, as both an art piece and as an empirical test-bed, to measure participants' emotional and narrative interaction with their self and self-identity?

A database, held by Wikipedia (2008), lists over three thousand games currently available, with many more being created, adding to the different categories or genres. With so many games and genres to play, some game play does allow this time, blending and engagement process to be enabled, for example, games such as 'Myst', although playing 'Myst' involves tasks or puzzle-solving, usually requiring constant movement and alertness. "Many buy Myst, but few complete it because of the tasks and puzzles involved in playing the game" (Sengstack, 1996). Reviews from players include "Nothing is quite as it seems. Reclusive beings and mysterious creatures populate the land. Deep, dark secrets lay hidden at every turn. Your utmost powers of observation and reason are required to complete a most elusive task". Most people who play games are most likely to be familiar with the concept of progression of difficulty, at least at a subconscious level - that games should get harder over time. Most designers know to build increasing difficulty into successive levels, missions, worlds or courses, (usually the single-player experiences). When playing 'Tetris', for example, as the player completes each section to join the blocks, the game increases in speed and difficulty. Difficulty, however, is only one portion of the overall game experience; there are several other elements that need to be structured, managed and carefully revealed, in order to provide the user with a truly compelling and enjoyable experience throughout game play.

SUMMARY CHAPTER ONE

This chapter has introduced and identified the field of research with an explanation of the new opportunities available to integrate science and art practices. Games are said to be an art form and artists are used to taking risks in order to push forward the uses of their chosen mediums. Combining the fields of art practice, science practice and game studies to create new blendings, introduces new opportunities to interact and blend self and self-identity to transform and create new internal narratives when game-playing; these unconventional haute games could, it is argued, produce new opportunities for self-interaction. Art and science, combined, are creating perceptual opportunities that are creating their own digital possibilities.

The structure of the thesis was introduced and terms were defined that are used throughout the thesis. Research questions were raised, which ask how separate fields, in combination, explore the myth of computer games and allow artists to create new interactions with unplanned perceptual possibilities. How do these interactions work? What is self and self-identity? How is it formed, created and interpreted in the mind of the player?

CHAPTER TWO:
CONCEPT OF SELF AND SELF-IDENTITY

2 OVERVIEW

This chapter discusses current and past definitions of 'self' and 'self-identity' from the fields of game studies, psychology and neuroscience. It investigates and discusses how artists have interpreted this 'self'. Artists have a tradition of making self-portraits, and making a self-portrait can be a thought-provoking experience. Self-portraits become an interpretation or 'map' of where one's internal vision of their internal self is, at that moment in time, and can change dramatically over a few years. What is the past and current analysis of 'self', is there even such a thing? How do modern computer games tap into the 'essence' of self and blend with players', or viewers' self-identity, to integrate a new 'self-blending', enabling immersion and engagement with a virtual environment?

2.1 INTRODUCTION

One of the simplest questions to ask oneself is; 'Who am I?', but how one thinks one looks to others, or how one thinks one appears to others, can be quite different from what is interpreted in reality. Is this 'self' an illusion? What does it actually consist of and how is it formed? What one thinks of about oneself, I argue, can change in different situations, with self and self-identity becoming blended to create an alternative self which suits that situation. Viewers process imagery through personal filters, through their own needs and egos and their place in space at that moment. These 'self-maps' become translated and expressed to viewers via images, the artist creating a virtual environment in a real-world space. To perceive self-essence, which can be captured in a way that reflects an artists' internal structure of self and self-identity and illustrates to viewers who one's self is, can be illusive at best; not all parts of the self may be reflected in a single moment but rather, over time, in flowing movements. We can never see ourselves; even if we stare in a mirror, the mirror distorts. A self-map, or portrait, is constructed from within, by structures in the brain firing and making connections in unexpected, unforeseen formulations. It is hard to create a self-portrait to reveal a self without embellishment, and artists often add visual clues to their self-portraits. Even a self-portrait of a three-quarter face, looking at the viewer, reveals part of the artist's self-identity, purely, in their choice of colour palette. People have so many distractions, things to organise, and places to go, nowadays, that their lives are fragmented and a sense of self seems to be difficult to capture. One way to change an image of the projected self is through game play. I argue that computer games provide an ideal opportunity to create a new persona,

or self-identity. When I first played the 'Sims' for example, I had multiple choices of how my avatar would look, for example, regarding gender, race, colour of hair, eyes, clothing, tattoos and many other accessories, but chose to remain female, blonde and without any tattoos, as I appear in the real world. When game players play, using the media of computer game and electronic game, how do they engage with their self and self-identity? Artists immerse themselves in their manipulation of materials and imagery; do game players immerse themselves in their environment, character and avatar? Do they 'become' the player-avatar, losing their sense of self-identity? Reflecting on my choice of the avatar, created by me to play the 'Sims' game, made me realise that I had represented my avatar as a female character to negotiate an unfamiliar territory. I wished to remain in a familiar body shape, in order to negotiate the game space, already 'knowing' my game character.

2.2 LITERATURE REVIEW: THEORY AND PRINCIPLES

When René Descartes (1596-1650) wrote his "Principles of Philosophy" in 1644, he proposed that doubt was a principal tool of disciplined inquiry, yet he could not doubt that he doubted. He reasoned that, if he doubted, he was thinking, therefore, he must exist. Thus existence depended upon perception. Descartes was a scientist and also an artist, who was dubbed the "Founder of Modern Philosophy" and the "Father of Modern Mathematics". At that time, any distinction between being an artist or scientist did not exist; curiosity was the driving force. Greek mathematicians originally began investigating geometry; Descartes built on these earlier experiments to found analytic geometry, that bridge between algebra and geometry crucial to the invention of calculus and analysis. Creativity is important in both the arts and science; that 'flash of inspiration' is needed to make new connections and inventions. Descartes' reflections on mind and mechanism gave us his most famous statement; Cogito ergo sum (French; Je pense, donc je suis - English; I think, therefore I am). Conceptualising means drawing a distinction between this and that, in order to understand an idea. To demonstrate the limitations of the senses, Descartes proposed what is known as the 'Wax Argument' (Garrett, 2007). He considered a piece of wax; his senses informed him that it had certain characteristics, such as shape, texture, size, colour, smell and so forth. When he brings the wax towards a flame, these characteristics change completely, however, it seems that it is still the same thing; it is still a piece of wax, although the data of the senses inform

him that all its characteristics are different. In order to properly grasp the nature of the wax, he cannot use the senses; he must use his mind. Descartes concludes; "Thus what I thought I had seen with my eyes, I actually grasped solely with the faculty of judgment, which is in my mind". Artists' transformations of material work in a similar fashion. What begins with coloured liquid, for example, blue watercolour paint, when applied to a piece of paper, is transformed into a summer sky, or a winter sea. Artists use their faculties, judgement, self-knowledge and practice, giving the material another use, but the material's chemical composition remains the same. This is the self as a 'doer', as distinct from the self as an object, reflecting on past events, analysing present perceptions, for example, should the liquid have more or less water added, allowing the self to shape future experiences. There is constant assimilation of new ideas and expulsion of old ideas. Artists' experimentation with materials is considered to be a method of investigation, but artists are trained to look into their self and use perception, emotions and lateral thinking, as a means to assist this investigation. Kant was influenced by Descartes when he wrote; "Who is the I that knows the bodily me, who has an image of myself and a sense of identity over time, who knows that I have propriate strivings? I know all these things, and what is more, I know that I know them. But who is it who has this perspectival grasp?...It is much easier to feel the self than to define the self" (Allport, 1961). It has been written that Kant; "Eradicated the last traces of the medieval worldview from modern philosophy, joined the key ideas of earlier rationalism and empiricism into a powerful model of the subjective origins of the fundamental principles of both science and morality, and laid the ground for much in the philosophy of the nineteenth and twentieth centuries" (Guyer, 1998, 2004). We can jump forward, here, to current research.

2.2.1 SELF-THEORY

Notions of self as a cognitive prototype had wide acceptance within social cognition (Cantor & Mischel, 1979; Hampson, 1982), but it has never been clear what the self was a prototype of. It may be a single entity contained in our minds which is able to distinguish itself from other people. Or, as argued by Ramachandran (2003a), perhaps in the brain there may be connections of structures combining and recombining in many different connection opportunities, to create a self, represented in the individual's cognitive system. That is to say, the self as prototype might be abstracted from multiple, context-specific,

mental representations of self, for example, self at work, self at home, self with friends, and other scenarios. All these conceptions of the self are important in the examination of what self and self-identity actually consists of. Cognitive neuroscience is developing both method and theory to image brain functions, investigating these complex theories of what brain mechanisms are involved, in the production of self and self-identity. In researching theories of self and self-identity, we also have to examine what is functioning in our brains. Our brains exist as a 'top-down, bottom-up' structure, that is, the spinal cord connects to the internal core, then brain; this physiology constantly sends signals between these structures, enabling the interaction and processing of messages to and from our external bodies to our internal selves, processing and monitoring bodily functions. Functions, such as breathing and blinking, are automatic, unconscious processes. A recent article published in 'The Times' newspaper discussed experiments that measure the brain's responses to imagery, and conscious/unconscious brain functions (Crompton, 2007). Researchers are investigating how the brain functions, by using functional brain-scanning equipment and how external/internal information is processed. These investigations are beginning to reveal an understanding of mechanisms accessed by the brain, for example, when viewing a piece of art perceived as beautiful; "The central issue - whether the whole brain working in concert, or parts of the brain working independently enable mind [and 'self'] is what fuels much of modern research" (Gazzaniga, et. al., 2002).

Investigating brain damage, for example, a person experiencing a particular injury to certain parts of their brain, may help in mapping brain activation, to investigate if the self consists of a certain formation of brain areas, or even just one part of the brain. The self could be a complex constellation of interconnected memories, attitudes, ideas, and representations, as seen in multiple personalities, or schizophrenia, where the patient cannot distinguish between conscious and subconscious thoughts. In this investigation, consciousness and self become intertwined, each creating new connections that inform and define further experiments. If we talk about self, we should also define consciousness; if we are not conscious then how can we investigate self. The illustration shown in Figure 4 is a visual interpretation of what consciousness looked like in the 17th century. "Consciousness is a quality of the mind generally regarded to comprise qualities such as self-awareness, sentience, sapience, and the ability to perceive the relationship between oneself and one's environment" (Searle, 1980).

Figure 4 Representation of consciousness 17th century (Fludd 1619)

2.3 PERCEPTION-BASED REPRESENTATIONS

Perception, in conjunction with the senses, is used as a process of acquiring, interpreting, selecting, and organizing sensory information. Perception-based representations of the self take at least three forms:

1. Mental images, as seen in "the mind's eye" and heard in "the mind's ear", which preserve sensory detail, for example, what our faces and bodies look like, what our voices sound like, the feel of our skin and body hair (Farah, 1988).
2. Spatial images, which preserve information about the spatial relations among features and objects - up/down, left/right, front/back in the absence of sensory details (Farah, et al., 1988).
3. Representations of serial order, which preserve information about the temporal relations of events, such as first/last, before/after, early/late, and remote/recent (Mandler & Dean, 1969) and other rank-ordered features such as richer/poorer and taller/shorter (Trabasso & Riley, 1975).

2.3.1 IDENTITY AND MEMORY

Locke (1690) identified the self with memory, whereas Descartes found the self in the immediate conscious experience of thinking ("I think, therefore I am"). Locke found identity in the extension of consciousness backward in time. In Locke's view, a person's identity extends to whatever parts of her or his past that she or he can remember. Consequently, past experiences, thoughts, or actions that the person does not remember

are not part of their identity. For Locke, identity and selfhood have nothing to do with continuity of the body, or even continuity of mind. Selfhood consists entirely in continuity of memory. A person who remembers nothing of her or his past, literally, has no identity. The notion of self as memory makes no sense unless there is a person, namely, oneself, to be represented in the memory. The movie 'Blade Runner' (1982), based on Philip K Dick's novel, 'Do Androids Dream of Electric Sheep?', introduced the possibility of an implanted-self; false memories making a replicant (android) believe that she was a human being. Perhaps the notion of I, me and mine, is derived empirically, but conceivably, this primitive sense of the self, as distinct from other objects and people in the environment, is'priori' knowledge. Freud (1900) gave new understanding of the importance of internal mental processes and produced a 'map' of how he thought our conscious worked. As shown in Figure 5, Freud believed that a great part of our self and self-identity was buried beneath the surface, not shown to the people we interact with in our daily lives, the lower and also major part of our self hidden away without any awareness by us in our day-to-day thought processes. "The collection of mental process understanding has been likened to an iceberg, where the vast majority is buried beneath the water's surface. The water would represent everything that we are not aware of, or have not experienced, and that has not been integrated into our personalities, referred to as the non-conscious" (AllPsych, 2003).

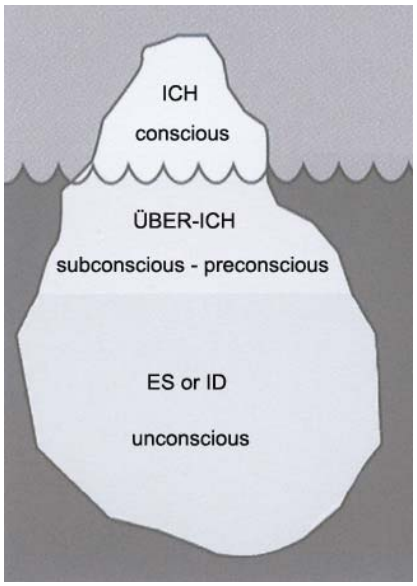


Figure 5 Conception of Human Psyche (van den Dungen, 2004-2008)

A recent article in 'New Scientist' discusses the possibility that many aspects of our lives are controlled by our subconscious, those thoughts which influence our every day

decisions and influence self and self-identity of which a person is not aware of and which are running below our level of consciousness. By intertwining theories of self with theories of consciousness, Douglas (2007) proposed a theoretical model of a four-system description, which introduced further processes in brain functioning. With our current scientific knowledge, one of the best ways to examine how a particular section of the brain affects consciousness is to observe the behavioural defects that people with damage to that section of the brain suffer; the mysteries of the specialized human brain force us to work backwards; only when a particular part of the brain ceases to work can we learn its biological purpose. Researchers use what they learn in a backward 'bottom-up' motion of investigation. Not until there is damage to the brain can it be discovered what has been removed from the person's self and self-identity, as Damasio (1999) discovered, when a person's limbs are amputated.

2.3.2 MYTHOLOGY AND SYMBOLISM

Freud and Jung began a whole new era for humankind, by mapping the threefold constitution of human; the spiritual, the psychic and the material. They brought to the forefront the contents of the psyche, as represented in ancient mythology and symbolism, teaching us that the psyche can be understood through reason. While Freud laid the groundwork, Jung extended this with his exploration of how the unconscious reveals itself though symbols. In this respect, artist's joined this quest for knowledge. Jung himself painted and sculpted his dreams and visions, so that he could better understand them. For the purpose of personal analysis, Jung talked about not judging the images of the subconscious, but simply accepting them as they came into consciousness, so that they could be analyzed. Artists were fascinated by the implications of these new psychological theories. They understood from them that the unconscious has important messages for the conscious mind, but the former communicates through images (symbols and archetypes), while the latter communicates through language. Surrealist artists wanted their work to be a link between the abstract spiritual realities and the real forms of the material world. To them, the object stood as a metaphor for an inner reality. Through their craft, whether it be painting, sculpting or drawing, artists could bring the inner realities of their subconscious to the conscious mind, so that meaning could be deciphered through analysis. Just as Michelangelo and Leonardo advanced the knowledge of the body's anatomy, surrealist artists strive to chart the anatomy of the psyche. Every

individual can, as Jung did, use art to bring forward messages from her or his personal unconscious. "The creative process, so far as we are able to follow it at all, consists in the unconscious activation of an archetypal image and elaborating and shaping the image into the finished work. By giving it shape, the artist translates it into the language of the present and so makes it possible for us to find our way back to the deepest springs of life" (Dobson, 2005).

2.3.3 SELF AND CONSCIOUSNESS

Lacan, Foucault and Heidegger concentrated on Freudian concepts and included Lacan's "theories of the unconscious, the castration complex, the ego, conceptualised as a mosaic of identifications and the centrality of language to any psychoanalytic work" (Rabate, 2002). Foucault was known for his critical studies of various social institutions, most notably, psychiatry, medicine, the human sciences and the prison system, as well as his work on the history of sexuality. His work concerning power, the relationship between power and knowledge and 'discourse', in relation to the history of Western thought, has been widely discussed and applied (Arac, 1988). Heidegger (1889-1976) argued that Western philosophy, since Plato, has misunderstood the nature of being, tending to treat it as 'a being' rather than asking about 'being' itself. He saw possibilities for dialogue with traditions of thought outside Western philosophy, particularly East Asian thinking. One of Heidegger's arguments was that, as we make the choices that determine who we are, we are always actualising one possible self at the expense of many others, so, in fact, we cannot be all that we can be. Other theories about the self include Rogers (1947), in whose view, "the self is the central ingredient in human personality and personal adjustment". He described the self as a social product, developing out of interpersonal relationship, striving for consistency and maintained that there is a basic human need for positive regard, both from others and from oneself. He also agued that "in every person there is a tendency towards self-actualization and development so long as this is permitted and encouraged by an inviting environment" (Purkey & Schmidt, 1987). Maslow acknowledged the presence of the unconscious, but he disagreed with Freud's belief that the vast majority of who we are is buried deep beyond our awareness. Maslow believed that we are aware of our motives and drives for the most part and that without the obstacles of life, we would all become psychologically healthy individuals, with a deep understanding of ourselves and an acceptance of the world around us. Where

Freud saw much negativity, Maslow focused his efforts on understanding the positives of humankind. Others would contend that, without the world, humans would go mad. Maslow's 'Hierarchy of Needs', illustrated in Figure 6, is a theory in psychology that he proposed in his 1943 paper, 'A Theory of Human Motivation', which he subsequently extended. His theory contends that, "As humans meet 'basic needs', they seek to satisfy successively 'higher needs' that occupy a set hierarchy" (Atherton, 2003). "Once these needs are met, we can move to the next level. We strive to move up these hierarchies, to gain knowledge about the world, and to work toward a sense of high self-worth" (AllPsych, 2003). This first level consists of our physiological needs, or our basic needs for survival. "Without food, water, sleep, and oxygen, nothing else in life matters".

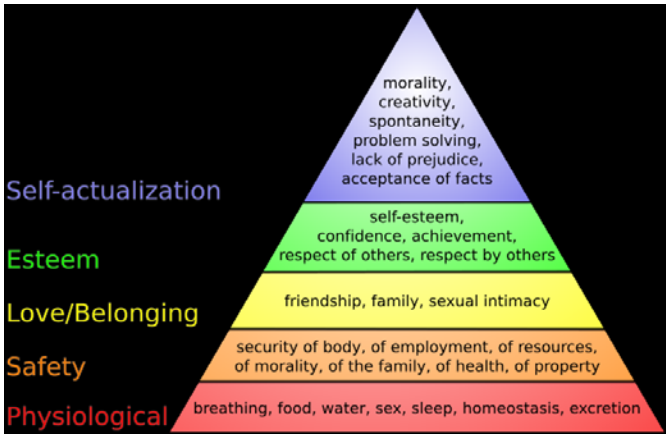


Figure 6 'Hierarchy of needs' Abraham Maslow (AllPsych) 1943

2.4 Current Theories: Patterns, Neurons, Clues

Damasio's theories are based on current neuroscientific theories regarding conceptualisation of brain function, a framework that originally derived from work on the visual system. Essentially, objects in the external environment cause patterns of activation of retinal receptive cells; these retinal patterns are processed serially and, in parallel, to extract the visual aspects of the environment that we perceive. Patterns in the external world create patterns of nerve-cell activity in the brain; these brain patterns are termed cognitive representations, so 'thinking' is done by means of patterns of nerve cell activation. These patterns of interaction could be likened to codes that are imparted to the reader, or viewer, where meaning is sifted through these systems, or patterns, or nerve interactions. "This inter-textual view of literature supports the concept that the meaning of an artistic work does not reside in that work, but in the viewer's dialogue with the work" (Kristeva, 1980). Both Damasio and Ramachandran investigate pattern

recognition; Ramachandran (2007) recently proposed a set of 'mirror neurons', seen in Figure 7 which were found by brain-imaging experiments that are beginning to dissolve the barrier between self and 'others'.

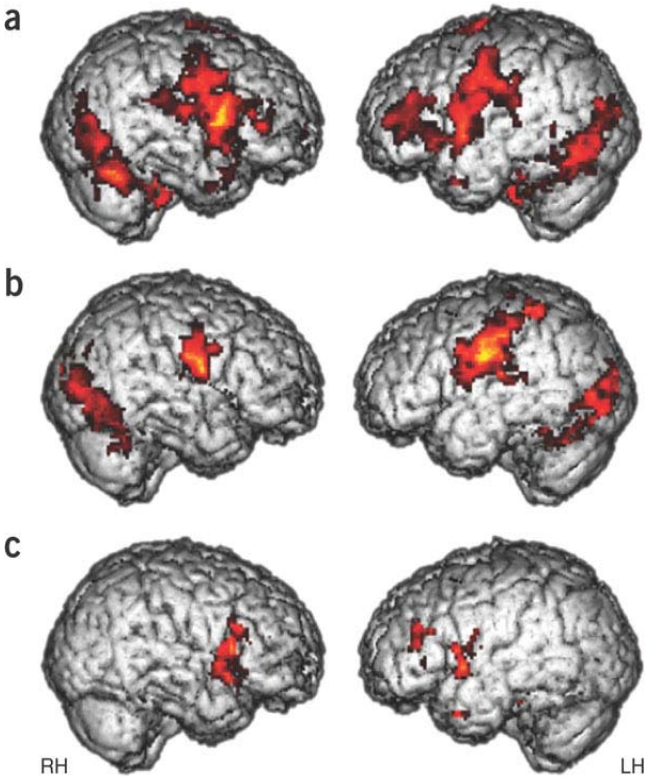


Figure 7 Mirror Neurons (Oberman, et al, 2005)

These mirror neurons were activated when I became 'self-aware' on perceiving that the person I was with had copied my actions, thus validating my existence in the world. I became 'aware' that I was an entity contained within a shell. When viewing a piece of artwork, the viewer's past history is revealed when they copy the actions of the artists, tracing the patterns revealed to interpret the image. When I have exhibited at various galleries, many people have told me that they interpret differing meanings to my work when viewing the same piece of imagery. What they bring to the piece are their own interpretations and life experiences, or self and what their self-identity consists of. When naming the piece, however, the viewer is given a textual 'clue' and then interprets the piece according to this clue, completing a puzzle, using the viewer's own self and self-identity experiences. Here is an example of the analysis of an inkblot test that I attempted online, (Rorschach, 1884-1922). "You have a deeply-rooted desire to make peace in the world. Whether through subtle interactions with loved ones, or through getting involved in social causes, it is important to you to be able to influence the world in a positive way. You have a deep respect for humankind. You care about the future of

the world, even beyond your own involvement in it, and you inspire others to feel the same way. Your innate drive toward peace guides you in daily life towards decisions that are respectful toward yourself and others. Your psyche is very rich; the more you learn about it, the more you will understand who you really are". Answering the limited choices offered by this test, I was aware that choosing certain options would influence the results of the test; having manipulated the results, the test had no efficacy in proving anything about my subconscious. When viewing a piece of art, the viewer is also similarly limited in choice, the choice of what their subjective memories hold. If self can be described as an interaction of patterning and making connections, then there is also sensation and perception to consider. Talking to ourselves or listening to our own internal dialogue we utilise cognitive approaches to interpret our behaviours, emotions and self, combining conscious and unconscious thought. How do you know who you are and what are the 'signs' that make you conscious of your self-identity?

There are many designations of self, including minimal self, defined as, "minimal self as not essentially embodied or active within an environment" (Gallagher, 2000). With numerous interpretations of self and self-identity, how do we find a self that is contained within our experience of the world? Is there even such a thing? Attempts to understand the mind and its operation go back at least to the Ancient Greeks, when philosophers began to try to explain the nature of human knowledge, however, the study of mind remained the province of philosophy, until the nineteenth century, when experimental psychology developed. Philosophers, psychologists and artists have all made attempts to explain what the self actually is and if it even exists as a quantifiable part of brain functions. How would I identify what self and self-identity means to me? The next section continues with a discussion of what the 'self' means to me.

2.5 BLENDING: ART PRACTICE-GAME STUDIES

As an artist, experimentation is important to me, to push boundaries and investigate the possibilities of what new materials or combinations of working methods could achieve. When I am writing with both hands at the same time, for example, is the impulse and connection I feel inside my brain a connection to my self? What this self means to me is the connections, or 'blends' made inside the electrical and chemical connections working within my brain. I liken it to a jigsaw puzzle, where pieces connect, combining together to create an image that starts to create a 'flow' state. Csikszentmihalyi (1993) identified

the following sequence. It starts with a creative idea, which becomes the goal. The development of the idea provides challenges. One's skills match the challenge. New skills or resources may need to be found. Each step provides some feedback about whether it works or doesn't work. The process and its feedback produce the exhilaration of enjoyment which reinforces motivation. These connections synthesise and jump between synaptic structures and cause a ricochet effect, this interconnectivity eventually re-surfacing as a coherent thought, which connects memories and real-world experiences stored inside the brain. This has been discussed and termed 'presence', as defined as 'spatial presence', 'involvement', and 'realness' by researches (Shubert, et al., 1999). This is also termed as 'physical space', 'engagement', 'naturalness', and 'negative effects' by (Lessiter, et al, 2000). Adams, (2004) proposes 'tactical', 'strategic' and 'narrative' immersion. Creating this pattern of synaptic responses is my interpretation of what is happening when something interacts with my 'self'. When playing the simulation god-game, 'September 12th', for example, I become the arbiter of people's fate, deciding when to drop a bomb and which building to target. I became immersed strategically, having to make decisions on whom next to bomb and kill. The focus of a god-game tends to be control over the lives of people. Jung stated, "When a synchronistic event is experienced, instead of feeling ourselves to be separated and isolated entities in a vast world, a deep and meaningful connection to others and to the universe can be felt…I became aware of an affinity, I could establish ties with something and someone" (Haule, 2000). When playing this game I felt myself becoming immersed and emotionally involved as to whether these avatars survived or not.

Turkle (2005) points out women's "non-linear" approach to the technology, calling it "soft mastery" and "bricolage" (as opposed to the "hard mastery" of linear, abstract thinking and computer programming). Although not all women adopt this approach, the 'Frag Dolls' (Ubisoft Entertainment, 2005), reported that they play their tournaments, "like boys and the men do, hard, fast and strong". The connection I make in my brain when writing with both hands, is in a different place from a connection made when viewing a piece of art, or playing a game that I instantly feel an affinity with. To explain this further, on a visit to an art gallery in Singapore, when viewing a piece of calligraphy, painted by the artist Wu Guanzhong (1919-Present), I felt something move in my stomach, a muscle contraction, in response to the piece of calligraphy on the gallery wall, my stomach literally 'turning over'. I instantly knew how difficult that one huge brush

stroke that the artist had created had been; how hard it must have been to even, physically, hold a brush that size and how the artist had created the mark. I imagined him holding the hand-made brush in his hand, ready to collect onto the brush the colours that he had mixed himself in a home-made palette. Instantly I knew the brush was hand-made, because the size and shape of the brush-stroke was larger than any brush that can be purchased. In that emotional 'circuit of interaction', my 'self' 'became' him, feeling him gathering his thoughts, clearing his head, and finally, with one deft stroke, placing the mark on the paper. I then sympathised with just how much courage it took to leave that one brush mark on the paper and not add anything else to it. In front of that piece of art, I felt tears come to my eyes, as I completed that emotional connection and became 'blended' with the piece, literally, 'placing' my 'self' in the painting, losing my own identity and 'becoming' that brush stroke. I recognised the quality and knowledge that the artist had of his materials. This connection arose because I make work myself and knew exactly the technique, brush and inks needed to make the shape of the piece along with the effort and years of knowledge needed to create that piece. This knowledge enabled me to have an instant affinity with the work. The piece was finished, my connection ended - the jigsaw completed. My brain, literally, 'lit up' within micro-seconds with the connections it made. "The creative process, so far as we are able to follow it at all, consists in the unconscious activation of an archetypal image and elaborating and shaping the image into the finished work. By giving it shape, the artist translates it into the language of the present and so makes it possible for us to find our way back to the deepest springs of life" (Dobson, 2005).

How could my reaction to the piece of exhibited calligraphy be explained? "Locke's view of the self as memory is based on our ability to reproduce our experiences from memory. Hume's is based as well on our ability to reconstruct our experiences in memory. Freud, for his part, also adopted the Lockean view, with the proviso that the important memories are unconscious, as opposed to consciously accessible" (Kihlstrom & Beer, 2002). In such a structure, the retrieval of self-knowledge begins by activating the ego node, through perception, or thought, then tracing the activation as it spreads, through associated links to nodes representing various bits of episodic and semantic self-knowledge. This happens when viewing sketches I made years ago; it raises memories of where I was and how I felt when making the drawing, evoking an emotional response to my self and memories through this interaction. Philosophers have made many

attempts to define the self, and scientists, conducting brain-imaging experiments to investigate whether there is such a thing as 'self' contained in one, or several parts of the brain, began to make discoveries, as discussed previously. Zeki's studies have found that the orbito-frontal cortex engages when viewing an image that the viewer perceives as beautiful and has a connection with their self, subjectively, in an objective, quantifiable method (Crompton, 2007).

2.6 THE CARE PERSPECTIVE

There is an alternative mode and measurement of self and self-identity that is hypothesised; the 'Care Perspective'. This perspective is, in Gilligan's view (1982), a different and equally valid method to interpret moral situations and to decide how to act. In her discussion, the care perspective consists of human interconnectedness, the value of inter subjectivity, and trust (Baier, 1986). Also included are empathy with other individuals and an imaginative reconstruction of individual unique subjective viewpoints. Other definitions of self involve entering other narratives to engage with emotional meaning, making connections, such as intuitive leaps, which are sometimes dismissed as being of lesser importance. I argue that this alternative view of the self raises a valid point. There are many views on what 'self' is and many people have discussed and argued what does constitute self, or even if there is such a thing as self, or self-identity. Everyone I have interviewed from the game industry constantly report that they love games, love playing games and are passionate about creating games. Recent theories of the self and consciousness relate our sense of beauty and emotional responses to pleasure that create a holistic-self. Artists, such as Tracey Emin (when she created an intimate piece titled, 'Everyone I Have Ever Slept With' as shown in Figure 8), make work, using their memories, emotions and notions of self and self-identity to define their work. Included in this piece are the names of her mother and other family members, childhood friends and adult companions, as well as lovers and her unborn foetus, which was aborted.

Figure 8 ‘Everyone I Have Ever Slept With 1963–1995’ Tracey Emin 1995

Her whimsical piece, ‘Self-Portrait as a Small Bird’, seen in Figure 9, illustrates how an artist can ‘play’ with the concept of self and self-identity in a way that makes a new self or memory, in a cathartic release of emotion.

Figure 9 ‘Self-Portrait as a Small Bird’ Appliquéd blanket Tracey Emin© 2002

2.7 CONCEPT OF SELF AND SELF-IDENTITY

Can self or self-identity be defined or conceptualised? There are many notions from various differing and wide-ranging fields, which include concepts such as:

1. Consciousness of your own identity
2. A person considered as a unique individual; ‘one's own self’ combining form; oneself or itself; ‘self-control’
3. Self used as a combining form; relating to - of or by or to or from or for - the self ‘Self-knowledge’; ‘self-proclaimed’; ‘self-induced’
4. Pure awareness without thought and individual identification of any kind
5. A combination of spirit and soul conveniently considered as an entity; spirit-soul
6. Our sense of personal identity (who we think we are) that is a social product and develops over the life course

7. The individual person; the ego; the knower; that which persists through changes in a person (Wordnet 3.0, 2006)

Wertheim (2000) likens the self to "A fluid, leaking out around us all the time and joining each of us into a vast ocean, or web, of relationships with other leaky selves". I equate this concept to the blending of my 'self' with Wu's piece of art that engaged me intensely and emotionally, as discussed in a previous section.

Ramachandran proposed four states of self:

1. Continuity: a sense of time, a sense of past, a sense of future. (There seems to be a thread running through your personality, through your mind)
2. Unity or coherence of self. (In spite of the diversity of sensory experiences, memories, beliefs and thoughts, you experience yourself as one person, as a unity)
3. Embodiment or ownership. (Self as anchored to your body)
4. Agency. (Free will, your sense of being in charge of your own destiny)

He argues that, as a result of these observations, the self, really, is not one thing, but many. "Just like love or happiness, we have one word but it's actually lumping together many different phenomena". He was creating a model of the 'self' by using patient interaction and measurements to test, empirically, this construction of self. Taking people whose brains have been damaged and finding what constraints or changes that places upon the person's actions, he related a lack of some functions to a change in self-identity. "These results seem to support the hypothesis that the seemingly chaotic material in the psyche has the power to order itself" (Ramachandran, 2003a). The image, represented in Figure 10, is taken from the 'Blue Brain' project (EPFL, 2005). This project reverse engineers how the mammalian brain is constructed and how each piece interacts. This image illustrates where I feel connections happening deep inside my brain, as reported in the description of what I feel happening when I write with both hands at the same time.

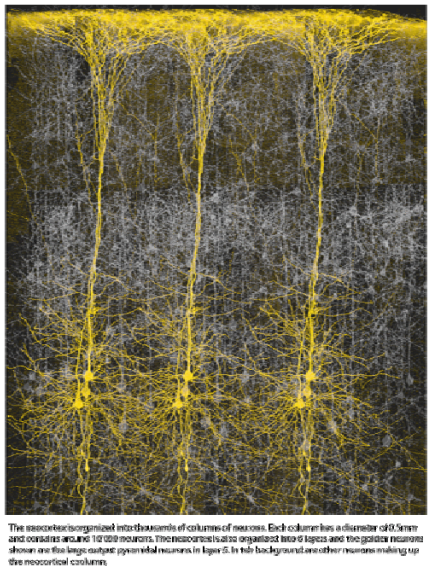


Figure 10 Imagery from the 'Blue Brain' project (EPFL, 2005)

Freud and Jung could be seen to have employed pseudo-models to experience and interpret this notion of the self. In doing this, we can abstract the self and reflect upon what it means. It is difficult for a mind to inspect itself, but, "taking our 'selves' outside ourselves makes it impossible to perceive ideas unless there is a perceiver" (Robinson & Mayblin, 2004). Visual images can aid learning, and some metaphorical aspects of language may have their roots in imagery. Art movements such as surrealism explored perception and played with mental imagery, using juxtapositions, such as fur-lined teacups and locomotives that floated in mid air. Will there come a time when haute games enjoy a similar kind of comparison, in the future, in initiating social changes in self-identity?

2.8 Game Studies: Insertion of Self and 'Self-Identity into a Game

Investigating and discussing self and self-identity, this thesis questioned how it is possible to place your 'self' into the mind of an artist, allowing the viewer an 'insight' to their self-identity. Would it be possible, the thesis asks to change the assumed perception of self-identity by changing the existing representation of self-identity? How do these mechanisms work and how do viewers perceive and interact with a piece of artwork, or a computer game? Art movements explored different materials and ways to interact with and engage the viewer. Can games do the same? It is now possible to 'skin' a 3D image of your face and head with a home computer, using that image, or avatar, to communicate via IM (Internet messaging). Using that image will also "allow you to drive in a rallying

game, fight your best friend in a virtual wrestling ring and try on glasses at an online optician" (Digimask, 2005). Figure 11 illustrates the process of skinning a face onto a 3D head model, downloaded from the Digimask web site. A full face photograph, combined with a profile photograph is then translated to become 'you' a 'self' living in a digital landscape, as shown in Figure 12.

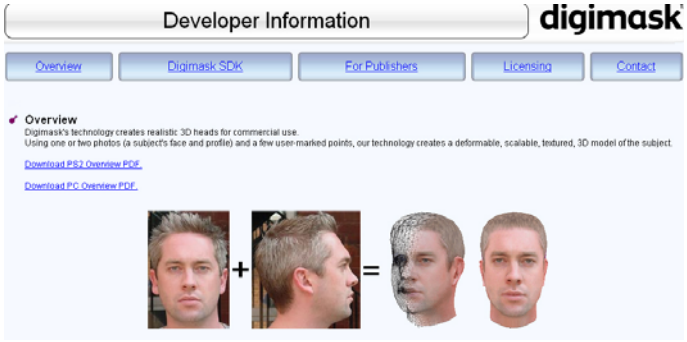


Figure 11 Skinning a picture of a head onto a 3D model 'Digimask' Screenshot

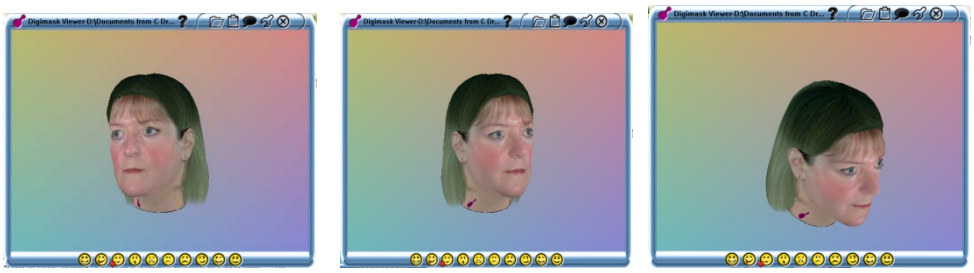


Figure 12 'Myself' in Digital Environment 'Digimask' Screenshot

Once in this landscape, how does 'self' behave? Do we accept this self? Do we suspend our original self? Other forms of altering your perception of self-identity, which exist and are available on the Internet, are the 'change of hair-style' sites, where a person can input a personal photo, then alter the hairstyle, obtaining an alternative avatar with a different self identity.

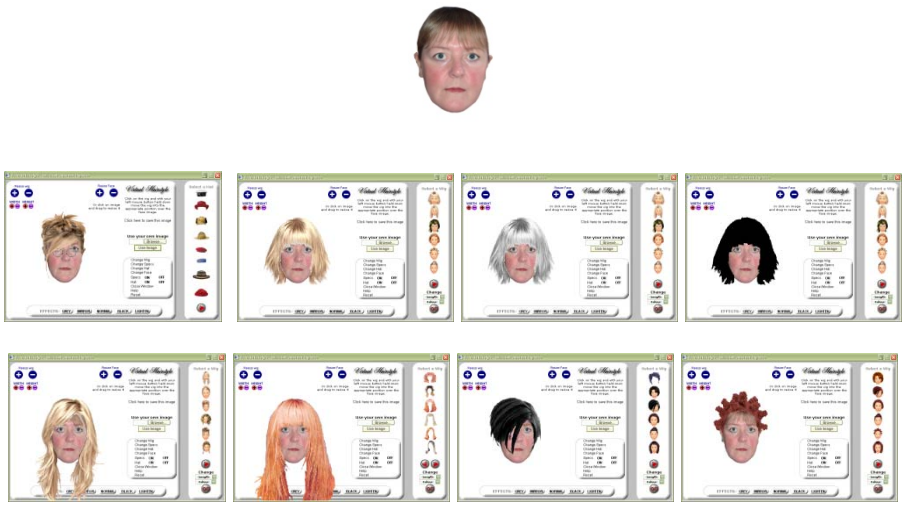


Figure 13 Alternative looks (UK Hairdressers, 2005)

The famous American photographer, Cindy Sherman, becomes chameleon-like, changing her image with each photograph. Is she a real person, or is this a set-up, specifically, for the camera? Which self is she? Is her true self represented here? Is it my true 'self,' as shown on these images, seen in Figure 13? Changing her image questions basic reality and the image that is projected; Figure 14 illustrates how she changes her outside persona and represents herself in other guises.

Figure 14 'Untitled' Cindy Sherman 2000

What possibilities are there to interact with your inner, hidden, or complex self, in virtual environments? Sony's computer game, EYETOY® (2005), works by using a camera that tracks movement. This creates a method by which the player is projected onto a monitor, as a virtual picture of 'themselves'. This enables the player to become part of the game and they perform actions, such as dancing, playing air-guitar, or fighting. These games take place in a virtual environment and allow the player to become a digital representation, immersing their self into a digital landscape playscape (DLP), as shown in Figure 15.


Figure 15 'EYETOY' Sony 2005

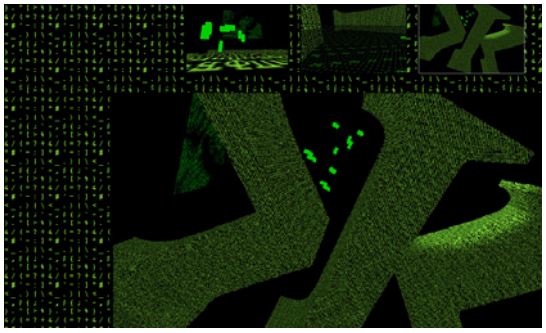
According to Lauria (1997), games have the potential to transcend properties like continuity and causality, through the creation of virtual space, where all elements function to create meaning beyond their separate extensions in a local plane. "The whole becomes greater than the sum of its parts". She continues; "The potential capability of VR (also VEs) to extend or enhance the range of our experience has metaphysical implications". Game appropriation of these methods of inserting your self-image could cause a mechanism of self and identity transference (SIT), enabling a deeper level of engagement with the game medium. Playing these games takes one away from the real world, becoming a digital self as represented on the digital stage. The 'Fourth Wall' disappears and the game blends the player into the virtual world, in much the same way as creating a piece of artwork; a similar mechanism of SIT occurs.

2.9 HAUTE GAMES: ART GAMES

What are the innovative possibilities of blending self with computer games? Table 1 shows a few examples of these games that show subversion. Vuk Ćosić, for example, replaces surfaces with the Cyrillic alphabet, 'Jodi' subverts coding, which is altered to produce something else and 'Pac-Man' is played in a Mondrian painting. These subversions are other than what was originally intended by the creators of the game. Artists subvert the original coding, to see how far they can change the meaning of a piece, and in doing so, create new perceptual opportunities to view imagery and make interactions in alternative renderings.

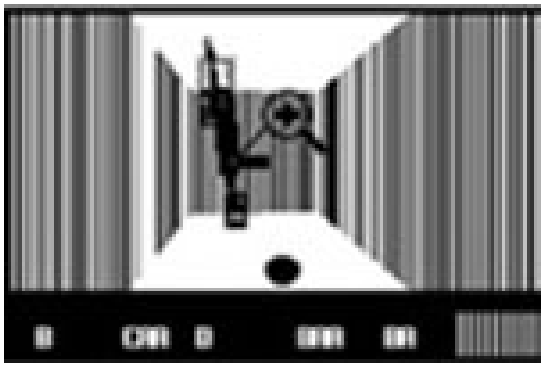
TABLE 1 ART GAMES

Vuk Ćosić: The ASCII Unreal As a reaction to the photo-like 3D worlds, Ćosić replaced all surfaces in letters from the Cyrillic alphabet. Some will also remember the green/black colour from the old computers.



JoDI:SOD

JoDi's SOD is a modification of the game Wolfenstein. You can actually attempt to play the game, but everything is scrambled-in the way that has become typical for JoDi.



Pac-Mondrian

Play Pac-Man in the setting of Mondrian's Broadway Boogie Woogie-painting.

The game play is like in the classic game Pac-Man.

The game that this author loved playing the most in all these 'art games', was a whimsical game called 'Samorost' (Artificial, 2007). This game is set in an amazing universe and the main character goes through several levels with quirky details. One is actually playing the game, but at a very slow pace as it takes a long time to work out what to do. Having to 'puzzle-out' what the game requires the player to do, however, is sometimes annoying. In Figure 16, for example, one of the tasks shown below is to fill up the container by knocking the small creature off the end of the left-hand water-pipe, cranking the handle of the pump, which allows time for 3 drops of liquid to be pumped into the container, before the creature is back on the water pipe. This task has to be repeated - it seems endlessly - before there is enough liquid able to be boiled.

Figure 16 'Samorost' Artificial 2007

Tops have to be removed from jars and the mouse-creature has to swing on the poppy seed-heads to add seeds to the water container. The container holds liquid, which has to boil, by 'blowing' on the fire jets and there are other tasks before completion, allowing the character to move on to the next level. All this proceeds at a snail's pace, giving the player time to appreciate the aesthetics of the play-scene. When playing the game, the actual solving of puzzles became unimportant, as my personal self identified and placed the player in the alternative world, a 'strange world' on which she could breathe in space and look with wonder and awe at the game world-space. The aesthetics of these art game worlds are created as alternative game world spaces, allowing the self to interact in unexpected blendings. Self can be signified by many different images, for example, in 'Samorost', self is signified as a small, impish figure. When playing 'Pac-Man' or 'Space Invaders', the players' self is a character consisting of pixels creating shapes, as shown in Figure 17.

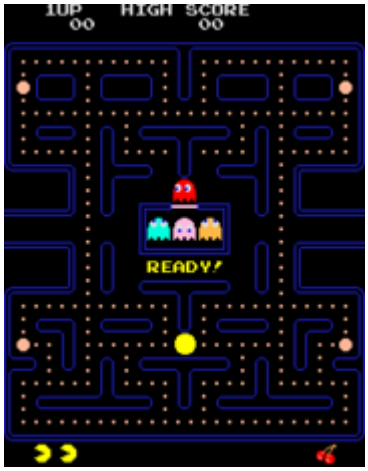


Figure 17 'Pac-Man' and 'Space Invader' 2007

2.10 Art Practice Methodology: Interpreting Self and Self-Identity

"Interactivity produces action–action produces choice–choice produces action and so on" (Crawford, 2005). In the case of a game like 'Samorost', or a painting, a blank screen or canvas offers infinite choice. Choice interacts with the world to create agency and identifies further choices. "After the first brush stroke, the canvas assumes a life of its own; at this point you become both governor and spectator to your own event" (Franklin, 2005). In producing art, I argue that we cannot help but portray our innermost self, our pieces becoming representations of our psychological states. SIT into a piece of artwork produced in a DLP creates a virtual self interacting with materials. The fourth wall disappears and the player-artist becomes blended with the piece of work.

2.11 Identity Fluidity

Is there a way to cause 'identity fluidity' to subvert the traditional game play of conflict and challenge? How does competition create engagement in a computer game? "Conflict/competition, challenge or opposition is what gets your adrenaline and creative juices flowing, and what makes you excited about playing the game. While not everyone likes head-to-head competition and some people shy from conflict, most of us enjoy a challenge, particularly if we get to choose it and set its difficulty" (Prensky, 2001). Part of the experience of playing 'Samorost' or 'Myst', as a game player, is also the chance to interact with another person's world-view - a view of alternative universes and impossible spaces created by game design and artistic intervention with materials. People play games for different reasons, so what types of people play games and why do they play them? A study by XEO Design (Lazarro, 2004), identified four player 'keys' of hard fun,

easy fun, social play and altered states, these keys unlocking emotional states experienced by players, including surprise, disgust and wonder. Although they have since been updated, 'Samorost' for me tapped into 2 of the 4 keys described by the study of player types. The first key was 'easy fun' and it awakened a sense of curiosity in me. I was enticed, or seduced, into exploring this new world and wanted to 'crack the code' of the puzzles to be completed. The second key was 'altered states' which created an emotional response by stimulating my senses with intriguing and compelling graphics and puzzles. A study by International Hobo (2004) used Myers-Briggs topology to categorise types of game players. These types included 'warriors' and 'searchers'. This topology was mapped on to game players after observing their type of reaction to playing games, resulting in the identification of player types, such as conquerors, managers and wanderers. These investigations should allow games to be created that will appeal to a specific player demographic. Real-time computer-art objects can be designed so that the user, through participation, realises an aesthetic experience. The passive viewer must become an active participant in the actual context provided by the system. A case can be made for the idea that art can alter perception and that, since perception is an active organizing process, rather than a passive retention of image causation, only by actively participating with the art object can one perceive it, thus, in perceiving it, change one's notions of what it is intending to display. The constraints that the artist establishes with the software determine the types of options s/he can offer the participant and the options determine the way that the participant is to interact with the art object, but would this affect a change in self, or seduce a game player to play an alternative game genre?

2.12 ART PRACTICE REVIEW

'Osmose' (1995) and 'Ephémère' (1998) were interactive environments created by the painter Char Davies, who talked about these pieces as being "My most recent attempts to distil and amplify the sensations and emotions of being conscious, embodied and mortal, i.e. how it feels to be alive here now among all this, immersed in the vast, multi-channelled flow of life through space and time". She goes on to reveal; "Here, space is not perceived as empty or passive, but sensually embraces, envelops the whole body, inviting reverie, and surrender of the self, in rapture of the deep" (Davies, 2003b). Interaction with her environments involved the use of gloves and a body suit, which fitted over the chest area and measured breathing rates. A 'heads-up' display was contained in

a head set, worn over the eyes, through which the participant, or immersant, as Char named them, viewed the environment.

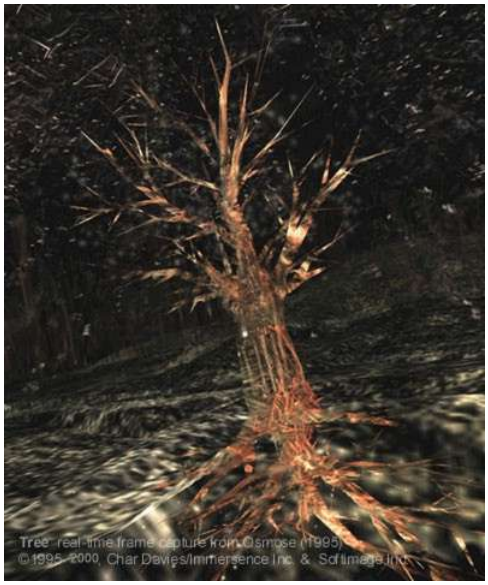


Figure 18 'Osmose' Char Davies 1995

Char stated "Here, space is not perceived as empty or passive, but sensually embraces, envelops the whole body, inviting reverie, and surrender of the self, in rapture of the deep". Figures 18 and 19 illustrate her painterly aesthetic; these soft, painterly, translucent forms are combined with gentle animations and colours to form the virtual environment.

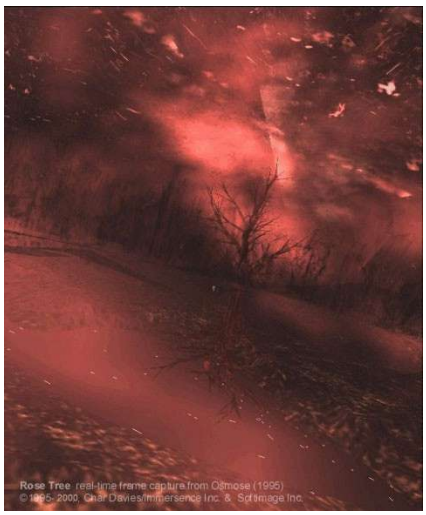


Figure 19 'Osmose' Char Davies 1995

In calling the work, "breathtaking", Brenda Laurel also described it as, "a fundamentally powerful use of technology in the service of, dare I say, nature". Even more intriguing are the first-hand testimonies of immersants. Some find themselves weeping, slipping into a trance, drifting like elemental spirits. Others compare it to lucid dreams, or

out of body experiences. The head curator of the Musée d'art contemporain de Montréal made an extraordinary statement on completing the journey; she was no longer afraid of dying. Nicole Stenge, a VR animator, experienced a moment of quasi-mystical revelation, saying, [those who] "decided to follow the light would find a common thread running through cyberspace, dream, hallucination and mysticism where image, music, language and love were pulsing in one harmony" (Wertheim, 2000). The method of interaction used to navigate around this environment, via breathing control and body movement was a novel way to interact with an environment. Breathing had to be slow and controlled in order to navigate to the 'depths' of the environment; the immersant's body had to sway backwards and forwards, to navigate towards objects. At the time, this innovative method of interaction created an experience, or presence, in an environment with imagery and technology that had not previously been experienced; I believe that it is a forerunner of what the Wii could be capable of attaining, in future games technology (Nintendo, 2008). That such a piece of work could cause such comments, is an amazing thing in itself, when it is, after all, a virtual environment, composed of nothing but pixels, photons and sounds firing on a monitor. The comments are a marvellous tribute to any piece of work produced by an artist in this medium. This work has been described as one of the most immersive experiences ever created, yet games companies seem to have ignored this alternative interaction, full-body experience and the experience of 'feel-good' emotions producing these remarkable reactions. When speaking to people who work in the games industry and game players expounding on how they love games and love to play games, I have never heard any of them saying that they have 'fallen in love' with 'Halo' for example, although they do speak of forgetting time and spending hours playing games. This may be connected with the cultural/gender bias of male game players wanting to appear tough in front of their peers.

2.12.1 ARTISTS AND VIRTUAL SPACE

Although our culture has drastically separated exterior from interior, valuing the objective over the subjective, poets, such as Rainer Maria Rilke and the philosopher Gaston Bachelard, spent much of their lives reaffirming the interrelationship. According to Lauria (1997), games have the potential to transcend properties, like continuity and causality, through the creation of virtual space, where all elements function to create meaning beyond their separate extensions in a local plane. Game appropriation of these

methods of inserting your 'self image' could cause a mechanism of 'self & identity transference' (SIT), enabling a deeper level of engagement with the game medium. Programmers are creating, for artists, a medium through which to explore many situations, the objective and subjective combining, for example, game worlds created by the games industry. Artists are using software as another material in their artistic repertoire, defining structures to define process, each language becoming unique, constraining or allowing flexibility. Artists can make imagery so powerful that they appeal to our tactile 'selves', compelling us to take their existence for granted. "When we take the image for granted, we gain pleasure that is genuine to us, lifting us into another plane of self-ness taking us further out of reality into a mental space" (Feedberg, 1991). Art can do this by taking the viewer to places they identify with, which connect and blend with self and self-identity. Investigation of underlying mechanisms involved in affording the emotions and life-changing experiences caused by these artistic virtual environments, would be a contribution to knowledge, creating a deeper understanding of what to incorporate into the next generation of games. Freeman (2003) says; "I believe that simply creating emotional experiences in a game is its own reward, in the sense that it makes the game more engaging and rich". He continues; "It's even better, however, if the emotion can be used to influence the player's actions and decisions within the game".

Although conceptions of the self are normally portrayed by Kantian theories, in a rational, logical order, the fabrication of rational rather than emotional mind and behaviour, is built on a 'top-down bottom-up' model of rationality and logic; next in line is language, then lastly, emotions (Fencott, 2007). The homogenized rational subject is not prey to ambivalence, anxiety, obsession, prejudice, hatred, or violence. If the 'female' is associated with emotion, what are male game players doing when playing games, but surrendering their rational, logical, ordered 'selves' to emotional states, for example, excitement, love, hate and triumph? As Damasio (1994) argues, "The rational self is a state built on feelings and emotions" and this self is in almost all of humanity.

Games are often wonderful ways of modelling, or extending existing aptitudes and behaviours, to become more than symbolic and actually break down the simplicity of self-imposed rules and structures that exist in the so-called 'real-world', to offer a means of escape. In 'seducing', rather than 'alerting' the person to interact with the world, would the player be persuaded to alter their self-identity? "Videogames at their best build

awe-inspiring spaces from immaterial light. They are cathedrals of fire, they represent the latest stage in the secularization of wonder that has been abroad since the fine arts were divorced from religion and aesthetics was invented" (Poole, 2000). With the secularisation of wonder, how can we wonder without worrying?

2.12.2 INTERACTION WITH ABSTRACTION

Interaction with an abstract game, such as 'Tetris', engages the self, creating real pleasure and alters the perceptions of the player's self-identity, in engagement with the game, contributing a sculptural awareness of space, interaction and loss of self. Appreciation of abstraction, when viewing the various shaped blocks, leads to an interaction with the aesthetic quality of the game. Many people are afraid of abstraction in art; when viewing a piece of work by Miro, for example, the piece shown in Figure 20, many would say "I don't understand it" and be afraid to have an opinion as to the meaning of the work. Many people do not understand abstraction when viewing an abstract art piece; they create their own version of what they think should be understood when viewing a piece of abstraction.

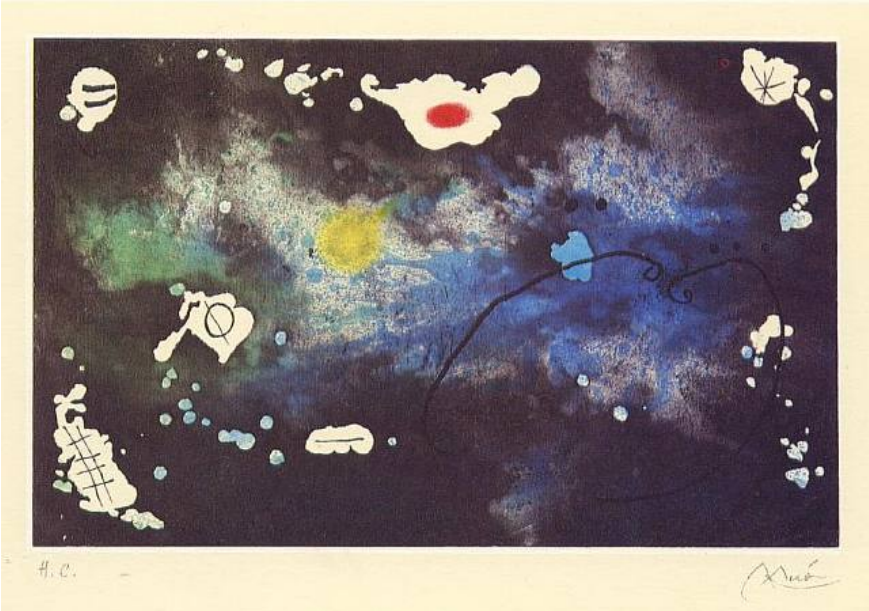


Figure 20 'Archipel Sauvage IV' Joan Miro 1970

When playing games that use abstract shapes, such as 'Tetris', however, players appreciate the skill of joining abstract shapes together. The game enables a rhythm to built up, the 'flow' of game-play leading the player into a deeper immersion with the game. In this abstract world they encounter abstraction, engage with it, name it and

finally enjoy the experience, appreciating the pure skill of joining shapes together and can begin to lose their sense of self-identity when interacting with the piece.

2.13 MEDIAISM OF ABSTRACTION POSSIBILITIES

This can be associated with a comment by Fencott (2003), when discussing the differences between feature films and computer games; "In the former we have the dominance of narrative over participation, while in the latter we seem to have the dominance of participation over narrative. In the Star Wars films we follow the story of Luke Skywalker, the Jedi Knight, but in the game Jedi Knight we become a Jedi Knight with our own, less grandiose stories to tell. The difference is important for virtual storytelling because we are essentially offering the user the potential to find and tell her or his own story - not necessarily the author's". We do not see many risks taken with new games pushing boundaries and making different aesthetic decisions, although games such as 'Katamari Damarcy', as discussed further in this thesis, are beginning to break new ground; there are notions that anything different will not sell. This means that new techniques and new approaches to computer game design need to be made to push the medium forward. Perhaps, introducing more people to abstraction (as self, in itself, is a form of abstraction), could introduce them to the possibilities of interacting with science and mathematics, in a different, artistic method, allowing their 'selves' to create a new, scientific self.

2.14 SELF: EMOTIONAL RESPONSE

There was another emotional response felt, in response to 'Art Scene', created by Pixar (2007), where abstraction was used as a mechanism to draw people into their animation piece, shown at an exhibition in Edinburgh. Here, a painting consisting of brush strokes of various colours, was made into a 3D world, which enabled the actual brush stroke colours to be placed into a 3D world and the individual brush stroke colours became the interface, or 'fourth wall', which was then broken, allowing the viewer to interact and navigate through the created world. Images from various movies and animations were used as a visual hook, to pull the viewer into the scene, immersing the viewer into the painting and creating a world never before seen. My self blended with the environment, becoming deeply seduced into the scene with the gentle camera movement flowing over 2D and 3D objects, revealing further views and scenes from movies, using a smooth,

soothing and gentle movement, wafting through the world depicted. Deepwell (1996) writes; "Feminist criticism has had much to say on the inherent biases within scholarship which prejudice women, but as women we also have to be aware of the limits within the models we borrow, the ideas we use and the limits of the discourse we may want to initiate given the subjects we focus on". She continues; "It is necessary to recognise that there are differences in perception of what the stakes are for feminism and the different historical circumstances in which those distinctions emerge. When we question why things are created the way they are, we must also question when and why they happened and why the model was created in the first place". Why is the self, discussed, without any emotions? Francis Crick (who won the Nobel Prize in medicine for deciphering the DNA code) said "[y]ou, your joys, sorrows, memories, ambitions, your sense of identity, free will and love are no more than behaviours of a vast assembly of nerve cells". This could also be investigated from an 'upside down' view of how the awe and wonder, created by this collection of nerve cells, can give voice to 'you, your joys' etc. In this collection of nerve cells, the artist employs image and metaphor, while the scientist uses quantitative and qualitative research and analysis; art encompasses an imaginative realm of aesthetics and science, a world of crisply circumscribed mathematical relationships. Art creates emotions to elicit emotion, science makes sense, yet there is a fundamental feature that connects these disciplines; they are both investigations into the nature of reality. The scientist sets out to break down the investigated subject into its component parts, to analyse the relationship between these parts; the artist juxtaposes different features of reality and synthesizes them, so that the whole work is greater than the sum of its parts. The artist, however, can, I argue, also use philosophy and science as a model, which would be worth reflecting on, including the reading of works by Descartes, Freud, Lacan, Kant and Jung, also the feminist views of the self by Kristeva, Chodoro and Butler, then reading Eastern theories of the self.

SUMMARY CHAPTER TWO

This chapter examined the way self and self-identity has been written about and discussed by philosophers and scientists. It examined the function of consciousness, of who is conscious and how self and self-identity become blended with present moments. Models of the self were studied and how the self has been modelled was investigated. The consequences of your 'self' projected into a virtual environment were discussed; it was argued that viewers process imagery through personal filters, through their own needs, egos and their place in space at that moment. Viewers interpret imagery through self-knowledge bringing their personal history, experiences, expectations and emotions along with them. Philosophers, scientists and artists have made many attempts to define the self; scientists are now conducting brain-imaging experiments to investigate whether there is such a thing as the self, contained in one, or several parts of the brain. The conclusion is that we still do not have a 'definitive-self', which has been identified or discovered by empirical experimentation. The closest detection yet is the discovery of mirror neurons firing in the brain that produce a copying function, allowing participants to build a virtual environment, which creates an internal model of self and self-identity by interacting with others. I was argued that artists and scientists can both respond to insight and intuition in order to formulate hypotheses and design experiments, but should never be seduced by 'common sense'. Investigation and research into self and self-identity may discover why players do become immersed in an environment and facilitate new ways to interact with digital technology. Artists and scientists respond to information that interacts with the self, subjectively and objectively, but artists can and do use quantitative and qualitative research as shown in the next part of this thesis. Perhaps the evolution of mind and the transformation of the self require a breaking free of clinging and 'this or that' thinking, to create new connections in this assembly of nerve cells that we name 'self' and 'self-identity'.

CHAPTER THREE:
SELF-IDENTITY: AN EMPIRICAL INVESTIGATION

3 OVERVIEW

How do artists create self-portraits and how is self-identity actually constructed? Can self-identity be manipulated? How can games create an identity that one can relate to and 'become', sloughing off one's skin and taking on a whole new identity? Is there a mechanism that creates SIT? This chapter describes an investigation, into how participants insert and blend their self and self-identify, with art works consisting of 2D digital images. It examines abstracted interactive blendings that were created, including risk-taking and the creation of engaging and blending, altered emotional connections. A seminal introduction of empirical methods is charted, which begins to examine if artists could create a transformation that affects a change in self-identity. It begins, initially, by testing human experience in categorising artistic imagery. It reports the results of the relationship between participants' empirical research, continues with the results from this investigation and ends with a discussion and conclusion on what has been accomplished.

3.1 INTRODUCTION: METHOD & MATERIALS

A web site, named 'Graphic Junkies' (2004) ran a competition online. which called for pieces of art, submitted as digital images, the rules of engagement being that each contestant should submit work to show answers to the brief, 'Just who you think you are', presented as a realistic self-portrait, abstract design, or even a visual representation of a feeling about oneself. The contestants were told that they were free to use any application, style, or medium, to prepare their entry, keeping in mind some simple rules. They were limited to a single entry, with no revisions allowed, and told to 'make it count'. The entries were to be submitted no larger than 1600 x 1200 pixels, with a resolution no higher than 72DPI. They were not required to create their entry to these exact requirements, however, they were told to expect their images to be sized for optimal viewing and display on the 'Graphic Junkies' site and to submit their entries in JPG or GIF formats only. They had to include a brief description, no more than two or three sentences, which was to be displayed along with their entry on the 'Graphic Junkies' web site. The deadline for the competition was June 30th, 2004, with the winner announced on July 16th, 2004. The winner of the contest was the piece submitted by Marek Chmielewski, as shown in Figure 21, who, in the judges' opinion, best interpreted the brief.

Figure 21 'Self-Portrait' Marek Chmielewski 2004

The entries were judged using criteria appertaining to the artist's ability to communicate the theme effectively, the artist's use of the application or chosen medium, the originality of the entry and their adherence to the guidelines of the contest. This was an ideal opportunity to investigate what these artists and other people's ideas about their own self-identity were. The analysis of the images created by the artists, in this empirical investigation, suggested a method that began to apply a structure and organisation of iconic material into coherent analysis. The entries to the competition were downloaded and saved as jpg files; the total number of entries to the competition was 181 entries. The first 55 images were used in the experiment and artistic practice was used to categorise the images as the base line to measure results.

In a pilot study, conducted on 6 members of a research group, six images were printed in black and white. These images were taken from the 'Graphic Junkies' web site and were the first six entered into the competition. The group were asked questions such as:

Who did they think the artist was?

What did they feel like when viewing the images?

Which gender do you think created the images?

Initial results obtained from this experiment resulted in textual responses to the images, including; 'communication', 'iconic', 'symbolic', 'indexical', 'morphing', 'changing', 'soul-searching', 'confusion', 'distance', 'encouragement', 'exploration', 'un-critical',

'play', 'childhood memories', 'sadness', 'laughing', 'fun', 'anger', 'deception', 'freaky' and 'mentally-disturbed'. Analysing these results showed that emotional responses to the imagery were high in number.

For the full experiment, printed images of the first 55 entries were used as stimulus material. The number of images chosen was the result of the initial study of the time taken to collate and categorise images, giving an approximate time-scale that would allow participants sufficient time to complete the exercise. The images were laminated, in order to ensure that they stayed in a coherent format and did not sustain damage. They were numbered on the back, so that the participants did not see the numbering system. When the study was run, none of the participants noticed the numbering system. Two copies of the images were made, allowing simultaneous data collection.

3.1.1 PARTICIPANTS

There were twenty-two participants. These included lecturers, students, artists and holistic therapists, in order to obtain data from a wide range of experience. Of these participants, 15 were female and 7 were male. The participants included a wide range of age-groups, from 22 years to 74 years old.

3.1.2 PROCEDURE

The study was conducted over a period of a week and took place in several different places, including a therapist's treatment room and various rooms at the University of Teesside. The length of time taken to complete the task varied from 5 minutes to 50 minutes, with an average of 20 minutes. Participants were given the space and the time to place the images in the piles they chose and did not have to work to a deadline, other than any self-imposed deadlines, for example, if they were taking a lunch break and had to be back at their desk. The participants were first asked to complete a questionnaire, measuring their emotional state (Harford, 1998). Each of the words listed described a mood state, for example, 'cheerful', 'aggressive', 'placid', and 'infuriated'. There were 32 emotions listed, with some of the same emotions having a different variation of meaning, for example, 'mellow', 'content' and 'placid' creating similar responses.

Using the rating scale provided, the participants were asked to indicate the extent to which they were experiencing each mood-state at that particular moment in time. They

did this by circling the number that most accurately corresponded to the way they were feeling at that moment in time. They were asked to work quickly through the words and that their initial reaction was the best, to indicate a response to all the mood-states, increasing the accuracy of the data collected. The rating scale was as follows

Definitely DO NOT Feel = 1 2 3 4 5 = Definitely Feel

Participants were then given instructions to place all 55 images into categories devised by them, for which they were given no guidance in the naming of the categories (free-response task). They were told that this image-sorting exercise was "part of a process to understand how viewers interpret imagery they see in an attempt to understand people's perceptions of imagery". They were not told that the images were self-portraits and were describing 'Just who you think you are?' They were told at the end of the exercise when they were invited to give any comments to the researcher. The exercise consisted of the following steps:

1. Participants looked through the images
2. Participants placed the images into piles using their own experiences, to categorise images that appeared to be similar to other images
3. Participants were asked to place the images in each pile, in order of preference, with the most important at the top and the least important at the bottom
4. Participants took a new piece of paper for each pile and, for each pile, they were asked to write a short description of that category, representing the images in the pile and place it on the top of the pile of relevant images

After they had finished, the data was collected by noting the category names, the number of each image placed in those categories, in order, responses to the emotional questionnaire, were attached to the individual data. The participants were then given the opportunity to comment on their experience of taking part in this study.

Comments received from participants included, "they enjoyed looking at the images", and "became absorbed in the task to the exclusion of outside distractions". They were "intrigued as to the nature of the person making the imagery" and wanted to know more about the study. At this point it was explained to them that the images were responses to the Graphic Junkies brief.

3.2 RESULTS

To perform the task, correctly, participants had to concentrate and become absorbed in categorising the images. One person's results were removed, because the participant was interrupted, continually, by mobile telephone calls. One hundred and eighty-two categories, in total, were identified by the participants, with a mean of 8.67 and a standard deviation of 2.00. The results were then analysed by comparing those results with the various occupations of the participants, to investigate whether there were any differences between the image-sorting strategies of, for example, artists, who identified a mean of 10.75 and psychologists, who identified a mean of 9.14. Two law-student participants identified nine and seven categories; this was similar to the other participants (alternative therapists, psychologists and others), as shown in Table 2.

TABLE 2 NUMBER OF CATEGORIES IDENTIFIED BY EACH PARTICIPANT

	Artists N=4	Therapists N=3	Psychologists N=7	Law students N=2	Others N=5
1	16	7	6	9	9
2	6	9	10	7	12
3	14	6	9		5
4	7		7		4
5			5		9
6			13		
7			14		

The results were input to card-sort analysis software (van Schaik, 2003) and the data analysed. The data analysis resulted in certain images being identified in a similar fashion. Within the 21 participants tested, three images were consistently grouped together. Table 3 shows three images placed into the same category by 43% of participants. These images were all of heads, with a dominant eye gazing at the viewer and were identified as 'Cluster Group 1' (C1). Various descriptions of what participants thought the images signified comprised part of data collection. They included, "I know who I am but will only reveal the image I want you to see", "dreaming, relaxed happy with oneself" and "emotions…capturing emotions from happy to depression". Participants seemed to blend their own emotional state to an image. If they were happy and relaxed, for example, they thought the image showed a happy and relaxed demeanour. By allowing themselves an emotional response to the images, participants responded without pre-conception. Labels created for images in C1 by participants included 'portrait', 'human faces' and 'happy/unhappy'. Label titles for categories

produced by participants in response to these three self-portrait images are shown in Table 3. A blending of self and self-identity with these images and allowing participants to place their own labels on what they thought these images were portraying, produced an interaction with the participant's self-identity, revealing the participants inner-self-reflections.

TABLE 3 IMAGE SORT CLUSTER GROUP 1
PARTICIPANTS DESCRIPTIONS OF SELF-PORTRAIT CATEGORIES



Eyes and Expression
Individuals
Dreaming, relaxed happy with oneself
Portraits
Photo's magazine
Nice Images
Mean, moody, Influenced by popular culture
Human Face
Portrait, human faces
Emotions - capturing emotions from happy-depression
Pre Raphaelite -self-indulgent
I know who I am but will only reveal the image I want you to see
Happy/unhappy
Suffering pain - hiding from reality/Masculinity
Look like adverts
Pop art
Partially obscured faces/Men/ vulnerability
Human Face/photograph/without text
Self portraits
Human Face descriptive
Photographic

Table 4 shows four images placed into the same category by 38% of participants. These images all contained recognisable human figures and faces; this group were classified as 'Cluster Group 2' (C2). Participants identified them with 'pride and smugness', 'pain and suffering', 'disturbed thoughts' and 'turmoil and despair'. Participants' comments revealed that they were concerned as to the state of the person who produced the image; "I hope he is ok?" and "That person knows what I am thinking", were questions and responses given by participants, on completion of the exercise. One participant said, "I totally identified with the pain and suffering that person is going through". Gazing at the images and placing labels on the images gave participants a glimpse of what the artists were trying to portray of themselves. This also allowed them to interpret the images by creating a bridge connecting participants' self and self-identity memories, crossing and blending the strange space that allowed participants to blend with the images. This empirical investigation revealed representations of self, created by using a method of interactive art. A relationship was created and participants invested their time and self-identity to describe what they thought the images meant.

TABLE 4 RESULTS OF IMAGE SORT CLUSTER GROUP 2

	Mythical Creatures Pride and smugness Deep thinking disturbed thoughts
	Violence Fears and Phobias Pain and Suffering Violence directed against others Deep thinking disturbed thoughts
	Violence Fears and Phobias Confusion Unsure of Self Worth Turmoil and Despair Deep thinking disturbed thoughts
	Discovering who I am Blurred Image hidden meaning Violence directed against others Imaginative fairly balanced

3.3 DISCUSSION: CARD SORT EXERCISE

There has long been a tradition of 'The Gaze' in the art world. Mulvey (1989), in her essay "Visual Pleasure and Narrative Cinema", introduced the concept of 'the gaze' as a symptom of power asymmetry, hypothesizing about what she called the "male gaze". Eye contact is particularly useful, as a signifier. The eyes have long been a significant communicator of messages and feelings. The length of time that eye contact is held and the position of the gaze, all communicate different sentiments. An illustration of this is 'staring', where the gaze is wide, direct and eye contact is held for a prolonged period. This is often seen as aggressive and challenging. "However, the set of perceptions in the viewing gaze cannot of itself provide criteria of recognition" (Thomas, 2001). "The effects of gazing and seeing someone gaze upon another provide us with a lot of information about our relationship to the subjects, or the relationships between the subjects upon whom we gaze, or the situation in which the subjects are doing the gazing" (Lazar, et al., 2005). The results of the card-sort exercise revealed that a staring eye could invoke responses as stated in the previous section. On testing responses to imagery, empirically, the results indicated that images placed into the same categories related to images showing a dominant eye facing the viewer.

3.4 PLAYING

This empirical study was the beginning of a notion that empirical methodology could combine with art practice. This first encounter with rigorous analysis, consisting of creating a method of investigation, in a structural logical order, required both physical and mental interaction from me. This was a completely different method from creating a piece of artwork. The data produced by this investigation could be used as a first step to producing a mathematical set of instructions, used as a basis for producing a virtual environment, allowing greater interaction with the participant, in much the same way as Leonardo da Vinci devised his set of instructions on perfect human proportions. One of the interesting observations was the way that participants did not seem to categorise the images in terms of self-portraiture, instead, they gave the images general titles, as described. The participants did not know the images were self-portraits, therefore, most participants gave their sorts titles that were aroused by their emotional responses to the images, 'played' with the images by placing them into one pile, then moving them to

another, as they progressed through the images. This 'playing' with images is similar to playing computer games and, I argue, is similar to becoming absorbed when creating a piece of artwork. When playing a game, players move through an environment, using visual clues to navigate, for example, walking through a tunnel when playing 'Doom'. They examine and explore objects, they practice with their material, manipulate the game pad, keyboard and joystick in much the same way as a painter manipulates her/his paintbrush in order to gain control of their material. They look around the playscape and change their viewpoint – as when viewing a piece of 2D artwork. They relate the play space to their previous knowledge of the space and what had happened when they navigated to an object. They name objects in the space and relate to them as in the real world; for example, the unreal object in the game of 'Pac-Man' became a character, although it was an abstract shape. They listen to their internal self, to receive the next set of instructions. They invent their own internal narration to fit their understanding of the game. They get to their goal, finish the level, then want to manipulate their material and reach the next level, gaining further experience of the material as they reach further into the game world. They relate to their character or avatar and can manipulate camera views, to see the character's face. Careful analysis of three-quarter face views, as shown in the results, could be a powerful way to interact with players' SIT. When advertising products on TV, actors look directly at the audience, making eye contact. "One of the main reasons for this is that it evokes the idea, and notion, of looking at oneself in the mirror. The eyes have long been a significant communicator of messages and feelings" (Stone, 2000). This is illustrated in Tables 3 and 4, C1 and C2; two were images that were repeatedly placed in the same piles; all had three-quarter faces as a dominant image, or contained as part of the image.

3.5 MECHANISM–MAGNETISM–MODEL

Mechanism is the idea that things work through cause and effect; one thing leads to another, which leads to another and so on; the past determines the present, is normally linked with determinism and with the natural sciences. Magnetism gains momentum through mechanisms of working with each other and, as an artist who is also interested in Curation, in the process, the meaning and the mediation of ideas. I enjoy creating a context for ideas to happen, developing context between audience and artwork and focusing on making artwork visible. Jung believed in synchronicity, the occurrence of

two events that are not linked causally, yet are meaningfully related (Jung, 1972). The 'synchronicity' of readily-available, cheaper 3D software provides artists and technologists causal chances of changing the view of the accepted graphic and realistic design of computer-game environments, bringing science and art together, while linking these ideas in a synthesis of creation. As part of my empirical investigation, qualitative and quantitative research was employed, to assess whether a contemplative environment would induce, in the player, a state of being in the present moment, when playing games, thus, giving the player time to create self-blendings. Popper argues that the use of classic logic by scientists is only one intermediate step in a much larger "process", which includes intuition, conjecture, inference, professional judgment and repeated testing. In promoting the sense of wonder that forms the motivation for science, hypotheses that agree with observations are confirmed, only in the sense that they can continue to be used as explanations and preferences for trying to resolve controversies through experiment and testing. "However, virtually any complex scientific argument can be criticised, and subjectivity can be found everywhere in science. Subjective Bayesian probability interprets 'probability' as 'the degree of belief (or strength of belief) an individual has in the truth of a proposition', and is in that respect subjective" (Popper, 1934). Subjectivity was present in the self-portraits created by the artists taking part in the competition. This subjectivity was engaged with, and interacted with participants who viewed the images. They 'believed' that their interpretation of the imagery was the correct one and were surprised when told what the images actually portrayed. Participants engaged with their subjective-creative imagination, activating their self and self-identity memories to provide explanations for what they were viewing.

3.6 RELAXATION

Participants reported that they became relaxed and absorbed in the task and enjoyed what they were doing. Some people 'relax' by getting into a hot bath, yet this only relaxes muscles, while raising heart rate and blood pressure, in the body's effort to rid itself of excess heat. Game players argue that they 'relax' while playing, getting a 'high' through the adrenaline pumping through their bodies. From a physiological point of view, relaxation is simply the absence of the stress response. It means physical calmness, not mental bliss. As stress is not worry, fear or depression, relaxation is not the absence of any of these. Like stress, relaxation refers to a physical, not a psychological state. One

can be quite relaxed, for instance, yet worried at the same time. The stress response is a primitive response. It helped our ancestors escape from tigers and from some of our other ancestors. It is a general response that is carried out by the sympathetic branch of the autonomic nervous system. Research into stress has focused on outdoor stress, "the transactional stress model emphasizes that recreational conflict is the product of an on-going transaction between the person, the environment and the results of coping" (Miller, et al., 2003). The chemical changes that take place in your body when you are stressed vary, according to the situation. When playing games, it is noticeable how players sit with their neck and shoulders held tightly. Is the rocketing market in video games having a damaging effect on the health of those who play them, or is the risk overplayed? In the media, there have been several stories blaming computer games for causing many incidents and aligning them with being very bad for people's health. Computer games are, "A Bad Thing" and "responsible for everything from childhood obesity to mental health problems" (Moore, 2007). One example was the death of a man in Korea, who died of heart failure after playing a computer game for fifty hours. How many times do players lose all sense of time and get up off their chairs, hours later, hungry, thirsty, stiff and sore from the hunched position of their arms and shoulders. Regular breaks are essential when operating computers for several hours and this information has now been written into Health and Safety documents (HSE, 2006). Programmes designed to make it impossible to continue until the user has had a break for a few minutes could be implemented, but there is also the possibility of making computer-game environments containing a relaxation element within game-play. These elements would invite players to engage with their own personal narrative, engaging players in the moment, clearing their minds and blending self by interaction with abstract objects and spaces.

3.7 STREAM OF THINKING

Consciousness is the great unknown and the subjective and the philosophical nature of consciousness makes it difficult to study. I tried to analyse my stream of thinking when I make connections, by alluding to Joyce's (1916) use of interior monologue and references to a character's psychic reality, rather than external surroundings. I was semi-awake in a day-dreaming state, thinking about art - games - Lascaux, cave-paintings - women making cave paintings - time to play - making time to play - art is my play - movement -

movement through a computer-created environment - art is play - games are play. In the 'strange space' I engage with, in my brain, these odd images were floating around in my mind. These images started to make a line of images, like a movie reel, in my brain and it felt 'right' and that it was a 'truth' that both genders painted imagery such as the artwork discovered in Lascaux, shown in Figure 22. Is it not, in fact, much more likely to be both cavewomen and cavemen working together, with the masculine terminology in our language marginalising any contribution from women?

Figure 22 'The Great Hall of the Bulls' The Caves of Lascaux (cult.gouv.fr) 2006

Could more artists and women working as game designers bring an alternative aesthetic to game design, maybe something gentler, more relaxing and seductive, or even wilder and more violent, to the world of computer game manufacture, creating alternative aesthetics in virtual spaces?

3.8 THE MYTH OF DEMYSTIFICATION: TECHNOLOGY IN A 'KNOWING' WAY

When examining artistic or scientific practice, method involves the following basic procedures; observation, description, prediction, control, identification of causes, time-order relationship, co-variation of events and the elimination of plausible alternatives. This scientific method requires intelligence, imagination and creativity. In the field of art and design, it is said that over-analysing the creative element means that something in the creative process will be removed, but I always find that the more information I have, the better the process becomes. Artists become 'knowing' of their materials through investigative processes, knowing their materials intimately, because of the curiosity of stretching the boundaries of materials. Artists, like scientists, ask a question; they gather information and resources, for example, making sketches, taking photographs and making colour notes. They formulate a question, for example, how

would I paint this scene to explain what it is I want to illustrate? They perform experiments; this could involve applying colour washes, or making several images of the scene, collecting their data as they work. They analyse and interpret data and draw conclusions that serve as a starting point for new hypotheses. One version of the scene may be too colourful; another version of the scene may create a scene more in keeping with the question by making a pencil drawing. They publish their results, hang their work in an exhibition and wait for a response from viewers of the piece (or pieces) of data (paintings). This response leads to further iterations, experiments and collection of more data, this ongoing process informing and creating more ideas and creating new hypotheses. This constant formulation of hypotheses, testing and experimentation with materials leads artists to become familiar with the properties of materials used. They know what they can do, how they work and how far to experiment with them. An example of this was when Rachel Whiteread was commissioned to build a monument in Berlin; she asked for a particular mix of cement. The director of the company arrived with the mix he thought she would need, disregarding Rachel's instructions. Rachel insisted that the mix would not work; the director insisted he had brought along the correct make of cement, but when Rachel tried to cast the work, the piece did not work and started to lose cohesion. Rachel stated; "I use this mixture all the time and I know it works and I know what I am doing." This knowledge of materials is one of the great strengths of artists, because they push boundaries, research to examine the available properties of materials and experiment to see how much and how far they can be tested.

3.9 ART PRACTICE AND SCIENCE PRACTICE

Scientific research and practice is modelled in a particular way. It begins with observation, observing something that is happening and questioning why it happens. This is then described and documented; causes are identified, predictions of what will happen are made, and tested, by controlling the occurrence. How could an example of art practice research be modelled and are there any similarities between art practice and science practice? The image-sorting experiment created opportunities to view and interact with an artist's self-portrait, raising the question, "how do artists create work that viewers identify and blend with, which is an artistic voyage of self-exploration?" What methods do they use? An example of my personal methodology of creating and investigating materials and objects is described as follows:

Observation: An example of a creative task as observed artistic research is the exploration of a selected object; this object was a seashell, picked up on a beach in North Wales. This object was infused with memories and emotions; the beautiful sunny day, the sound of the sea, the wind, the seagulls, the colours, the clouds in the sky, the person I was with and how happy I was at this time, how I looked, what I was wearing and at what point in my life I was. Every time this particular object is viewed, the whole scene is re-run in my mind, making a connection with that part of self-identity, which synthesised at that particular point-in-time.

Description: How would I even begin to capture this snapshot in time on a 2D sheet of paper? To set in motion this investigation and exploration, I prepared one hundred sheets of A5-size drawing paper and placed them in a pile on the right hand side of a table. The shell was placed on a white sheet of paper directly in front of me. At my left hand side I had various drawing materials. I am left-handed and this particular configuration is the best way for me to access materials. Over the course of two days I drew the shell again and again and again and again and again until I was fed up. After producing 30 images, running out of ideas, I thought I could not possibly make another variation on the theme, or think of another material to draw it with, or think that there was another item to the object, or its construction that I could possibly have missed.

Identification of Causes: I used pencils, pens, inks, biros, crayons, paint, wire, string. I made sculptures, using some of the A5 paper, cut, torn, and wired; I blew ink all over paper; I tore the paper and made a 3D model; I started inventing new ways of describing the object, using unusual materials. I walked all over the paper with dirty muddy boots to make an image; I shredded the paper and used the shredded pieces to describe the shell by dipping them into different coloured inks; I had drawn the shell with twigs, dipped in various liquids, including butter and coffee; I had placed the object on a photocopier and copied it; I examined the shell, by shining a photographic light in front of it to see the structure. I then returned to traditional drawing materials and drew the shell again and again and again and again until I had 70 images created and felt like screaming, then still kept going, inventing every and any method of describing this shell. I used salt to describe the shell; I went to the beach, wrapped the shell in a piece of A5 paper (the original pile of 100 now getting smaller and smaller) and threw the shell back into the sea, then unwrapped the paper, to check the recorded image; I bleached paper with

household bleach and added salt and pigments; used the shell to draw the shell; even slept with it under my pillow overnight.

Prediction: I finally created one hundred images of the shell and realised that I now knew this shell upside-down, backwards, inside-out, 2D and 3D. I had dreamt about it. I had lived with it. I had drawn it. I knew every single nook, cranny, crease and orifice. I knew the colour, line, texture, tone, weight and form of it- and realised that I had thoroughly and intimately researched that shell and no one could tell me anything that I did not know about this shell. I knew what type of shell it was, where it came from, how it was formed, what creature made it, what chemical composition it was made of and the tides that had brought it to the beach.

Outcome: After performing this task, I become conscious of how I would proceed under stress, how I would deal with inventiveness, how I would cope with idea formation and how I would manage the struggle of the working process. I became critically aware of the making of the work, the construction, analysis, invention, process, mastering tools, learning materials, how materials react, how to use different materials, what would work and what would not. I learned that bleach would melt holes in the paper; that I could not make an image by throwing it into sea water, as the water did not react with the shell in the way I anticipated, but that I did get an impression of the shell, which was an alternative to the image I expected and that I could use it. I learned that shredded paper mixed with PVA glue would combine to create a beautiful, unexpected, aesthetic sculpture. These 'happy accidents' became springboards, enabling the invention of further experiments. Next, I constructed a stretched canvas; 6 foot x 8 foot, picked the wood, cut, glued, mitred, constructed and sandpapered the wooden frame to hold the canvas. I measured and cut the canvas, stretched the canvas over the frame using specialist tools and fixed it securely to the frame. I then primed the canvas, ready to create yet another image of the shell in a much larger size, this time, with all the knowledge gained by researching and drawing the structure, shape, form and colour of the shell.

Control: Whatever kind of interactivity I engaged in, applying whatever kind of material, making my own canvas gave me the confidence to know that, when I began applying whatever materials I had available, the canvas would be an appropriate support. When I stood in front of the canvas, ready to make that first impression, this time, it was with the

confidence that I was ready to create an image of my interpretation of the shell, in this size, and that there would be no hesitation in applying paint to canvas because of the repertoire of techniques I had learned in my exploration and experimentation in describing the shell.

Art practice, applied, using a scientific model as a basis to begin the investigation, was useful and combining it with lateral thinking and methods of making imagery, created a synthesis of exploration to generate a final piece of work. Methods of making art, at the beginning of recorded history, have included using anything that produced an image, from the clay on the ground making a hand imprint on a rock, moving on to modern-day installations, erected and exhibited in an art-gallery space, to the present-day, capturing images of the world with pixels and light. Artists have found many methods to make and produce art. The convention that has arisen out of these varied methodologies have produced categories that art has been placed into and judged by, including painting, sculpture and printmaking, as examples of this categorisation. These conventional approaches, however, have been challenged in many ways and conventions have been overturned. Artists are an international and interdisciplinary group of people, who apply an unconventional mixture of research, science, art and theory in their creative practice. The frustrating dependencies, unmet expectations, shifting goals, retooled visions, and technical failures, as well as unanticipated discoveries and undreamed of possibilities, are all part of the process. Process, in fact, is at the core of many of the pieces made by artists in their daily working practice. Arising from these traditional methods of applying paint to a surface, building structures from clay and other materials are other ways to create imagery, art movements that grew from Dadaism and Surrealism for example. These movements went against the prescribed notion of what art was, and explored such juxtapositions as fur-lined teacups, shown in Figure 23, provoking the viewer into imagining what the fur-lined cup might feel like to drink from, forcing what could be a disagreeable sensation on a mixture of the senses and creating new ways of describing space.


Figure 23 'Fur-Lined Tea-Cup' Meret Oppenheim 1936

3.10 DESCRIBING SPACE

New ways of describing space were also explored by the artist Marcel Duchamp, in two-dimensional spaces with his piece, 'Nude Descending a Staircase No 2', illustrated in Figure 24.


Figure 24 'Nude Descending a Staircase No 2'. Marcel Duchamp 1912 oil, 58 x 35

He experimented with movement through a flat two dimensional plane and space and three and even four-dimensional space, when he experimented with space in his piece, shown in Figure 25 'The Bride Stripped Bare by Her Bachelors, Even' (Duchamp, 1923).

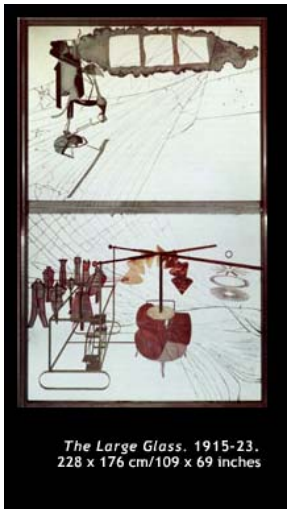


Figure 25 'The Bride Stripped Bare by Her Bachelors, Even' Marcel Duchamp 1923

Also called 'The Large Glass', this art piece depicts abstract forces and a sequence of interactions, 'The Large Glass' "is a picture of the unseen forces that shape human erotic activity and other mysteries" and is "a pictorial diagram of interactions among unseen, abstract forces as represented by these objects". This piece is also an enquiry into what art can do, representing Duchamp's investment in play and the non-linearity of thought and idea, within art practice. It is an attempt to show that artists can depict invisible worlds, not just visible ones and that art can engage the imagination and the intellect, "not just the eyes" (Stafford, 2002-2006). Although the work has a pleasing visual aesthetic, this does not declare its art function; in true Duchampian style, it is an art object because of its unorthodox art appearance (being neither painting nor sculpture). Much of the Surrealist work is a mixture of humour, sexuality and provocation, this aesthetic, and sometimes, creative process changing time, dimension and space, provoking new engagements with self and self-identity.

Participants engaged with the card-sort exercise and had to create their personal narratives to explain what they were seeing; 'playing' with the images gave them the opportunity to engage their self-imagination to interpret what they were seeing. Traditional methods of making self-portraits become an empirical evolution of form and structure. The experiment gave participants no clue that they were viewing self-portraits. At the end of the experiment, they did, in fact, find out that the images were in response to the brief, 'Just who you think you are?' Not knowing what the images were about allowed participants to engage with the imagery, to produce personal protocols relating to their own self and self-identity. Once they knew what the images were trying to portray, it changed their view about what they had seen, as previously discussed in section 3.2.

3.11 COMPUTER-BASED APPROACHES TO FINE ART

This experiment was conducted with digitally created images, which were all created using graphic software. When examining computer-based strategies for creating artwork, it has to be remembered that software is the 'hand' that the artist once used to impress clay imagery to rock and is as open to new methodologies and practices of creating as clay originally was and still is. It is becoming commonplace to replace the mouse with a graphic tablet, which enables the hand to be used in the same way as traditional applications of pencil, ink and paint, imitating the look and 'feel' of the medium on a computer monitor screen. This practice is continuing to emulate the traditional methods of making work, producing traditional imagery-based genres, including abstract, surreal, representational and conceptual work, albeit, reproduced in pixel form and displayed on a computer monitor screen, instead of being placed in a real-world situation, for example, an art gallery. Art also has a use, as seen in this card-sort exercise. Media tend to go through identifiable phases of evolution before their nature, therefore, their effective application, can be understood. Murray (1997), using the evolution of the printed book as an example, lists the following phases of evolution; embryonic, incunabula (technology exists but is only partially understood) and fully-fledged. Incunabulum, I believe, is the stage that creative and artistic people are at the moment, within the field of technology, particularly, computer-game technology (University of Notre Dame, 2004). Murray also discusses the future of the medium; new mediums arise, "that are specific to the medium and make best use of its capabilities". As shown in Table 5, she sees digital environments as procedural, participatory, spatial and encyclopaedic.

TABLE 5 CHARACTERISTICS OF MURRAY, 1997

Procedural	They make use of rules and rule-based descriptions of places, people, and objects
Participatory	In order to appreciate the particular pleasures of digital environments users have to take part
Spatial	Spatial in the sense that they are able to portray navigable space; this does not mean just 3D space but the navigable space of the WWW
Encyclopaedic	Digital environments offer the potential for information spaces that are simply too big to be comprehended by the human mind

From computer games in their incubation stage, for example, 'Pac-Man' with 2D graphics, to full resolution, high-definition games, such as 'Halo' (Bungie Studios, 2007) and 'Half Life' (Valve, 2008), as shown in Figure 26, games have started to fulfil the promise of greater representation of the real-world spaces, on high-spec platforms, such

as, 'Play Station 3' and 'Xbox360'. This shows the simple graphics that were available when games were first produced and the cinematic quality now available to new games being produced.

Figure 26 'Pac-Man' Original Game interface 'Halo' game environment 2007

With the introduction of more reasonably priced software packages, artists are now able to experiment with virtual environments, playing with these tools. It is true, however, that "[w]e are still learning how to design effective content for virtual environments" (Lindley, et al., 2001), especially content that experiments with the virtual landscape. "Appropriation of elements from the audiovisual apparatus of computer games and their transportation into the art context is probably the most widely used artistic strategy in this context. Here, artists do not necessarily need in-depth knowledge of a game's technology or rules" (Stockburger, 2004). As an example, Ball (2006) noted; "[a]rtists are starting to use the pattern-forming algorithms like cellular automata to create visual art and music".

3.12 Perceptual Opportunities

Perceptual Opportunities offer a generic means of talking about the meaning of game objects. They can also be used to look at the relationship between objects, their meanings and the way these affect game-play. According to Fencott (2004), "[s]ome objects seem to attract our attention to possibility of danger, reward, and so on. Part of the art of game design is surely to provide players with carefully structured opportunities to allow them to explore, strategize, formulate and solve problems, and plan for and attain goals", as shown in Figure 27.

Figure 27 'Perceptual Opportunities' Clive Fencott 2004

"This in turn allows them to feel some degree of control over what they are doing, allows them to creatively unfold the plot, become immersed, and maybe become transformed in terms of skills or our whole persona" (Fencott, 2004). This transformation can be the creation of a personal narrative, when interacting and blending self and self-identity with game objects and spaces. As participants named and created their own, personal self-narrative with the self-portrait images, they felt a degree of control over the narratives and categories that they were creating. They became absorbed in the task, creating their own internal self-blendings with the images and what they thought was being portrayed. This created, within them, a perceptual opportunity of interaction. They may not have agreed with what the artist intended them to perceive, for example, one participant named the image of the girl (Table 3, cluster group 1) as, "Dreaming, relaxed happy with oneself", when, in fact, the artist's description was, "So alone, yet so close to love. Thrown in the cold to die because I wasn't one of you. All I feel is numb love."

3.13 CHARACTERISING PERCEPTUAL OPPORTUNITIES

The relationships between POs can be documented, using perceptual maps, which are a sort of grammatical structuring that seeks to ensure that users construct an appropriate temporal ordering over their attentions and activities within the game. Fencott (2004) comments, "[a]ttractors are POs that seek to draw the attention of a player directly to areas of interest or to situations which require action. Attractors are the means by which users are stimulated into setting goals for themselves. Attractors are used in painting to allow the viewer's eye to navigate around a painting". Fencott continues, "[i]t is thus

important that major attractors are associated with retainers, which reward players with things to do, remember, excite, puzzle, etc. and which will allow them to feel they have attained the goal they set themselves as a result of the attractor. Attractors may be characterised according to the reasons they draw attention to themselves both denotationally and connotatively". The Figure 28 screenshot, from 'Star World', shows some of these objects.

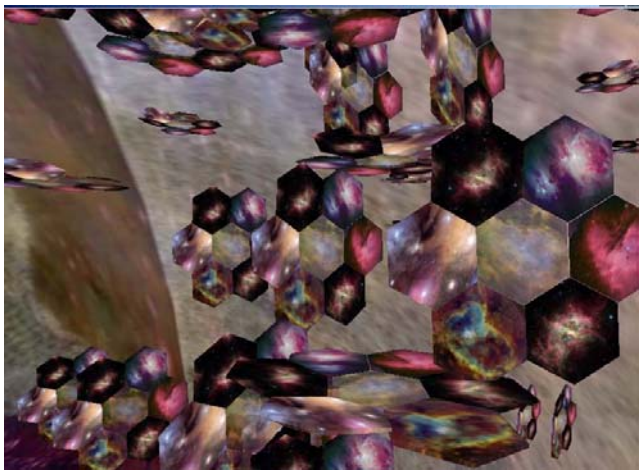


Figure 28 'Star World' 'Hexagons' Maggie Parker © 2005

Table 6 describes objects that may be included in a game space. Included in this space are objects/attractors, which combine with other objects to create the game play space, into which a player's self is projected, when engaging with the game space and play.

TABLE 6 OBJECT MAP

Mystery objects	Partially obscured/revealed objects, strange or unknown objects, for example, both closed and open doors and doorways.
Active objects	Movement, flashing lights, sounds changing pitch or volume
Alien objects	Objects that belong to another world, game, or context altogether, 2D maps, strange symbols to indicate the end of levels
Sensational objects	Objects which attract attention through non-visual senses, spatialised sounds, vibrations, smells etc.
Awesome objects	Large, famous, expansive, etc.
Dynamically configured objects	Objects that are relocated in space/time

3.14 INTERACTION AND 'THE FOURTH WALL'

The 'fourth wall' is sometimes included as part of game space and narrative. This could be when a character discovers that they are part of a fiction and 'breaks the fourth wall', to make contact with their audience. Participants broke the fourth wall when they were

asked to categorise images; when participating in the exercise, participants had to make physical contact with the images. In an art-gallery scenario, these images would have been shown hanging on a wall, for example, therefore, not allowed to be touched, or held. Breaking the fourth wall was originally used as a device to include theatre-goers, for example, Shakespeare's plays include references to 'Groundlings', who were part of the audience, who paid for the cheapest entry and who stood around the stage. These 'groundlings' interacted with the actors, who, at various points in the performance; spoke directly to them, including them in the production. This was used, very effectively, in various films, for example, 'Shirley Valentine' (Russell, 1989). Shirley, played by the actor Pauline Collins, seen in Figure 29, is a middle-aged Liverpool housewife. She finds herself talking to the 'wall' (the fourth wall that is the film-theatre audience), while she prepares her husband's chips 'n' egg, wondering what happened to her life. She compares scenes in her current life with what she used to be like and feels that she is stagnated and in a rut, but when her best friend wins an all-expenses-paid vacation to Greece for two, Shirley begins to see the world, and her 'self' and self-identity, who she thinks she is, in a different light.

Figure 29 'Shirley Valentine' Pauline Collins 1989

In this situation, the 'fourth wall' that the character breaks becomes part of the overall narrative. Interaction with the audience's self-identity breaks down the boundary between filmed action, causing the audience to become part of the dialogue, enables immersion in the narrative and invites the 'willing suspension of disbelief' (Coleridge, 1817). This same effect is used by artists to 'invite' a viewer into the narrative painting-plane, when a line takes the eye of the viewer beyond the end of the picture frame. This has been named as 'narrative immersion' when playing computer games. "Narrative immersion occurs when players become invested in a story", (spending their time and energy to understand and engage with it), "and is similar to what

is experienced while reading a book or watching a movie" (Adams, 2004). I compare this 'fourth wall' interaction to a similar strategy used by the computer game industry, an example of which is in the game 'Icewind Dale' (Game Spy, 2007). One of the characters responds to being clicked on too many times, by saying, "You're treating me as if I was a pawn, in some sort of...game". Lacan, in his Seminar One, told his audience; "I can feel myself under the gaze of someone whose eyes I do not see, not even discern. This window, if it gets a bit dark, and if I have reasons for thinking that there is someone behind it, is straight-away a gaze" (Felluga, 2001). Breaking the fourth wall is also common in video games, such as 'Final Fantasy V', and 'Donkey Kong', where game characters sometimes communicate with players, transforming a viewer-player into an active participant on two levels, as interactor/agent and immersant.

3.15 TRANSFORMATION

Digital techniques and media have "transformed traditional forms of art such as printing, painting, photography and sculpture" (Paul, 2003). These new forms of art are made possible by digital technologies, including digital installation and virtual reality. My own work has been transformed by blending art and formal methods, in a symbiotic relationship with a formal-methods expert, that allowed the work to be used to produce empirical outcomes, a conference paper, for example, where my PhD work was used to illustrate the difficulties of combining art and scientific fields, yet highlighting similarities between art practice and formal methods research. "Maggie Parker is a digital artist currently working on her PhD with the University of Teesside's School of Computing. Trained as a painter and printmaker, Maggie turned to the digital world to create an artistic environment that would be impossible to re-produce in a 'real world' scenario". Working with a highly technical person creates its own problems, however, the possibilities for the blending of different fields, people and medium, are manifold, including, "[c]reating interactive environment pieces which can be navigated through in a way that is unimaginable when viewing a painting". In the creation of my piece, 'Star World, an interactive meditative environment, the user is able to use mouse controls to navigate and control the speed of navigation, "taking control away from the artist and exploring aesthetic uses of computer software" (Oates & Parker, 2005).

3.16 DIGITAL ART

The use of computers and digital technology for the production of artworks can be traced back to the 1960s, contributions to the growing interest in digital art include:

An exhibition of computer graphics in art by Georg Nees, in 1965.

The introduction of the term, 'Virtual Reality', coined by Jaron Lannier and Ivan Sutherland.

The founding of the interdisciplinary art, science and technology journal, Leonardo in 1967.

The establishment of the Computer Arts Society in 1969.

The increasing availability and reduction in costs of hardware and software, the spread of the Internet and World Wide Web.

The popularity of computer-generated animations and games.

There are many histories written about the forming and beginning of computer arts; it is not the intention of this thesis to explore this history in detail, except to argue that it has not yet reached maturity, as an art form. Robert Fitzpatrick, director of Chicago's Museum of Contemporary Art argues that digital art is a potentially powerful, but still embryonic medium, likening it to the evolution of photography in the 19th century. "Photography began by simply capturing a building or a person, and it took decades for artists to develop the medium as a brilliant, original art form" Loring (2001). She argues that some digital art techniques, such as virtual reality, have artistic potential; "right now the technology is primarily being used for Sony PlayStations and things like that; artistically it has not reached a level of meaningful content yet". Others, however, maintain that games are an art-form, because of the visual nature of games and that digital art is already having a profound impact on artistic expression; "Over the past decade the world of contemporary art has experienced the beginnings of a tectonic shift. Digital technology has arrived as a component of everyday life and contemporary art on a global scale… Artists are adopting new technologies in the studio, deploying them in the gallery, inhabiting them through the Internet, and making artwork that reflects our technology-saturated society in a stunning range of ways" (010101, 2001). BALTIC (Centre for Contemporary Art, Gateshead) exhibited the work of James

Hutchinson, who combines an interest in drawing with his skills in manipulating images through computer software. His artwork 'Drawn', explored what happened when late-night doodles using pencil on paper meet the latest cutting edge technology. Darko Fritz, an artist-in-residence at the Baltic, used architecture, organic materials, public transportation systems, communications systems (TV, radio, newspapers, the Internet, fax), as well as traditional art forms, such as printing, photography and video to investigate mobility and life in the digital age. "Digital technology offers new possibilities for artists to explore, including: interactivity, participation, dynamic nature and customizability" (Paul, 2003).

3.17 INTERACTIVITY

Although a viewer of any artwork can be said to interact with it, digital art often goes beyond mental interaction, to incorporate physical interaction - the viewer is able to interact, physically, with a digital piece, via a mouse. Control over content, context and time can be transferred from the artist to the audience (Paul, 2003). Jeffrey Shaw's 'The Legible City' (1988-91), for example, involved the user sitting on a (fixed-down) bicycle. A computer translated the physical movements of the pedals and handle-bars to change the user's view and enable apparent navigation of a 'city', -made up of computer-generated, 3Dletters. Digital artists producing interactive works are working, therefore, with systems that involve people. No longer are 'users' the recipients of an artist's 'vision', they are a part of it, part of a system. Hence, digital art can often be seen as a socio-technical system, like the organisational systems normally studied by information systems researchers.

3.17.1 PARTICIPATION

Through interactivity, people participate in digital art (Paul, 2003). Sometimes they can participate within parameters set by the artist, other times they create the parameters themselves. In some works, they become remote participants in time-based artistic performances. With some artworks there is only a blank screen unless the viewer does something. Some digital artists also work collaboratively, with participants, during the development of a piece. If a finished artwork is to involve the audience as a part of it, then artists may need to involve others during its development; through collaboration, the assumptions that otherwise obscure creativity can be explored and challenged. The use of

digital technology enables artworks to react to changing data flows and the real-time transmission of data (Paul, 2003). Lynn Hershman's 'Synthia' (2001), for example, shows a virtual character whose actions are related to the stock-market fluctuations (if the market goes up, she dances, if it goes down, she chain smokes and so on). Hence, one information system (an artwork) is linked to another information system (the stock market).

3.18 ART: EXPLORATION-INVESTIGATION AND PLAY

Genn (2007), quoted an artist talking about her method of working; 'Work is play', she said. Play frees up the inner child, empowers confidence and invites creative élan. Play is a creative need. She knew her Carl Jung". How does an artist use differing methods and combine fields? Is there an empirical implication in methods employed by artists to create work as a challenge to existing modes of thinking and discourse? Traditionally, computing has been seen as logical and rational, so appeals to those who enjoy logic and rationality. 'Logical-mathematical intelligence' is the capacity to analyse problems logically, carry out mathematical operations, and investigate issues scientifically (Gardner, 1993), a highly developed skill in many computing academics. This can clash, however, with many artists' modes of thinking and discourse, who "freely speak of their work in terms of love, emotion and engagement" (Oates & Parker, 2005). What happens when 'artists' are given software to 'play-with'? An example of an artist playing with digital environments is thinking of alternative uses to introduce people, in a playful way, to new software and a digital environment (see appendix VII:A). The introduction of affordable digital cameras has encouraged people to experiment with new approaches to photography and create images that play with their idea of what self and their self-identity is. After taking them, what do people do with the photographs if they are not centred, or have something unwanted in the picture, or they would like to restore an old photograph? What do people do when they can cut, copy, or paste a document or spreadsheet (Parker & Fencott, 2004)? Working with 3D and digital manipulation software led me to implement and deliver a course in the community. As part of this far-seeing cultural change, I set up and ran an 'Introduction to Digital Manipulation' course, which was delivered in the community at the local IT centre. I taught participants how to scan, how to cut and paste, how to move objects from one image to another and the availability and usage of the software's tools. This playful method of working caused an enormous

amount of interest and publicity, bringing disparate parts of our scattered community closer together, forging links with various other groups and encouraging creativity, self-esteem and confidence. At the end of the course, the students were so enthusiastic that I was inspired to curate an exhibition, which was subsequently titled, 'IT Doesn't Have to Make Sense', a comment made by one of the students that came as a flash of inspiration to her development.

Older students were taught how to place an object that they had an emotional connection with on a scanner, scan it into the computer via a graphics package, then, in a really basic way, they were shown how to make changes to the object, using the various filters available. I demonstrated to students that they could manipulate their interaction between computer and software and encouraged them not to be afraid of using a computer. This 'game' taught them to learn in a dissimilar method to the logical tutorial fashion used by teaching, for example, learning a word processing package with a manual by their side, working through each tutorial section, in order. The confidence that they gained from this exercise changed their notion of self-identity, making them realise that they could make and create images that would stand up to public scrutiny. This change to their perception of self-identity, by this nurturing-care perspective, enabled the construction of self-disclosure, feelings of intimacy and nurture. This human inter-connectedness values trust and inter-subjectivity (Gilligan, 1982).

The next logical step for my students was the introduction to the Internet and playing online computer games. Even the oldest member of the community (85 years) became involved in playing online games, beginning with 'Solitaire' and some of the students have subsequently played games, such as 'Halo' and 'Half Life', after purchasing Play-Stations and game-playing equipment. This is an example of the innovative system of interaction that artists can facilitate between members of the public and shows how playing games can become a catalyst for change, for previous non-gamers. The notion of their selves and self-identities became quite different, by the discovery that they could interact with art and computer games. This possibility enabled new connections to be made between their notions of what their self-identities were previously, creating new connections, blendings and narratives with their internal selves.

3.19 MYTH OF COMPUTER-GAME PLAYERS

It is a common myth that players of computer games are all adolescent males; market-research has shown that people over the age of fifty are one of the most rapidly growing demographic groups of players. The types of game that 'Grey Gamers' are playing are what are commonly termed as, 'casual games', for example, 'Solitaire' 'Tetris' and 'Brain Training'. It will be interesting to see whether this will change with the introduction of the 'Wii'. It will also be interesting to see which game genres arise from this equipment. One of the key characteristics of casual games is that there is very little that players need to learn before they begin playing. It is important that positive feelings, such a sense of well-being and achievement, are not lost by users. How virtual spaces and game studies are perceived can be changed and artistic intervention leads the way towards new interactions and perceptual opportunities. Self and self-identity could become interchangeable, leading players to interact with various parts of their self-identities, transforming self and emotions in new, unexpected configurations. Participants who took part in the card-sorting exercise did not have any idea of what they were doing, but they fulfilled their allotted task and had to interact with images in a thoughtful way, which responded to their own identities. They did not need an avatar to enable them to navigate unfamiliar territories; this raised the first research sub question.

3.19.1 RESEARCH SUB QUESTION 1

Would omitting an avatar enable a player to become relaxed and immersed, enabling the player to blend with the environment, using abstract artefacts to support and invoke a relaxing experience?

SUMMARY CHAPTER THREE

Participants were invited to take part in an image-sort exercise. Participants reported that they became engrossed in the task, in their comments, also reported that they became relaxed and absorbed with the task, but could this 'play' experience and absorption be repeated in a virtual environment? Results were obtained that identified two cluster groups. Both groups had some form of recognisable human shape contained in the sort. When creating a self-portrait, it is a common theme to begin with looking into a mirror with a three-quarter side-facing view (when creating your own image). What is more significant than face that is shown to the world? Other personal objects from the artist's personal history are often added, to instil the image with even more meaning and reinforce that the piece is of the self, since only that artist would use those objects. In the study, conducted as described, however, personal objects did not appear to be as important to the participants as it was the close-up of faces to which participants responded. Despite the trouble that a lot of artists take to make their self-portraits personal to them, by adding personal items to reveal to the world 'who I am', perhaps they are not needed in these pieces at all. As his text accompaniment, the winner of the competition wrote, "malarz, surrealista, realista". Other artists who entered the competition wrote about themselves and their personal journey, which were not reflected in participant responses. Participants became invested with the imagery; they absorbed, interacted and blended with personal self-identities and memories, to produce an explanation of what they were seeing. This interaction with art pieces in an empirical method provided an interesting description of thought processes involved in making blends with imagery. Scientific practice was described and an enquiry into what art can do, by investment in play and the non-linearity of thought and ideas within art practice, was discussed. Perceptual opportunities that seek to draw the attention of a player directly to areas of interest, or situations that require action and digital techniques and media, have transformed traditional forms of art and games. It was imagination, creativity, experimentation, observation and play that produced a series of participant protocols; these protocols became the driving force upon which to test construction, by creating 'Star World'. This relationship between empirical research and interactive art was important to this research, as it was the beginning of the notion of using art practice techniques to create a 3D world, inspired by the comments made by participants, who managed the sorting task in a way that was unexpected. Their comments made me

question how participants would navigate a surreal environment and how they would interact with a piece of artwork that did not have any relationship to the real world. This also raised the first research question, as posed in this chapter. Creating this digital environment, it was argued, could be said to be a self-portrait, in the way that anything produced through the medium of art combines elements of self and self-identity, creating a synthesis and blending of concepts that are in the self-environment of perception. The introduction of the player and their responses to having the power to interact, physically and mentally, with this digital world, via mouse control, with content, context and time under the control of the participant's cognitive processes, will be examined in Chapters Five and Six, but primarily, this haute game must be constructed.

CHAPTER FOUR:
'STAR WORLD': AN HAUTE GAME

4 OVERVIEW

The reason for the creation and building of a 3D computer environment is examined. Could creating a new 'haute game', by blending art practice, science practice and self-identity transference, create an empirical test-bed on which to test viewers' reactions? This chapter discusses the technical details of how the environment was created, its system design and how my artistic practice informed the aesthetics of the environment.

4.1 INTRODUCTION

Computer games have become connected with violence by the popular media. Shootings in America have been blamed on young men playing 'shoot-em-up' games and becoming immersed in the game; 'becoming' the game character and re-enacting the games in the 'real world', thus going on shooting sprees. However, "the largest group of attackers were more interested in violence in their own writings and only one eighth of attackers exhibited an interest in violent video games" (Vossekuil, et al., 2002). This is an important myth to rectify by employment of game studies and theory. If games are being connected to violence by the popular media, can they also be connected to a gentler engagement with game play? Playing a computer game that blends with players' emotions to engage and interact in a gentle, protective and peaceful virtual-environment scenario, could become as commonplace as playing 'beat-em-up', 'shoot-em-up' games. The number of people buying games for their parents, for example, Dr Kawasaki's 'Brain Training' game, seems to suggest that this is already happening. What other game-genres could non-game players interact with and play? Building on the history of genre-breaking haute games, as discussed in Chapter two, an opportunity to create an alternative, interactive computer game environment was allowed by the award of a senior fellowship with Digital City. This piece was developed, to begin both an artistic and empirical investigation into creating an alternative space, in order to consider if whether creating a seductive, non-threatening environment, without a viewable avatar, creates engagement and SIT. Will this environment induce players to engage in an abstract space, creating their own narrative? This environment will not be about shooting virtual robots or chasing imaginary VR bio-zombies, but will be based on creating a game-space to induce an alternative interaction based on relaxation, personal interaction and engagement. It also addresses the second research question raised.

4.1.1 RESEARCH SUB QUESTION 2

Could artistic and empirical models of practice be used to formulate and introduce diverse aesthetics into a computer environment?

4.2 SYSTEM DESIGN

In this ‘veduta ideata’ (see appendix VII:E) ‘Star World’ becomes an idealised view, based on an actual situation, which is beautified or improved, by adding entirely fictive elements and landscapes to illustrate ‘ideal’ spaces, as was practiced by architects, such as Andrea Palladio (1570). It consists of a realistically-conceived scene that contains wholly imaginary elements. Star maps are textured onto a displacement-mapped twig landscape, producing stars wrapped around the bark of trees. Handmade paper, scanned in and reproduced digitally becomes a rotating inner sphere, a real-world item transformed into a mythical landscape. Slow-moving animations create a hypnotic feast for the eyes; the elements in the digital landscape may not exist, but the spirit of the artefacts exists in the space. When sketching real-world textures, I noticed that real-world objects have a surface texture, which is the surface roughness - not the surface colour or pattern, which is especially important for close-up shots. In a real-world space, responding to this texture is an expected reaction to re-creating surface texture, however, in ‘Star World’, textures were not re-created as rough surfaces and are placed in unexpected configurations, as shown in Figure 30.

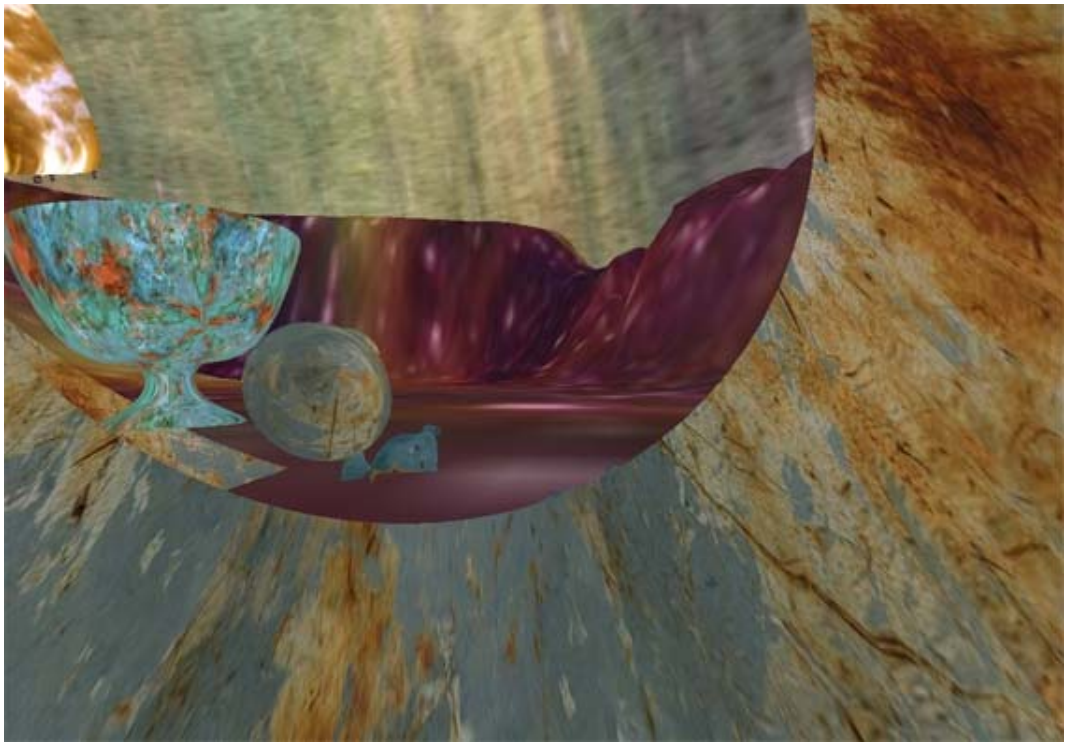


Figure 30 ‘Star World’ Screenshot Maggie Parker © 2005

There are few rules to learn in negotiating this space; the controls are very simple, being set to create a meander through the game space; move slowly, take your time and become engaged in creating narrative with the abstract objects, being the few rules. There is no avatar represented for a game self to ‘become’; one can imagine one’s self in any guise. The player’s role is to become engaged, to feel safe, de-stressed, quiet and peaceful. The game structure is a simple landscape, with few core mechanics, animations, sound and textures. Figure 30 shows the starting point of the game space. All players succeed, simply, by engaging with the environment; there is no way to lose, as there is no competition. The physical challenge is timing and rhythm, for example, the speed of movement of the cursor keys being controlled and the exploration challenge becomes negotiating illogical spaces. The player may not expect to be able to fly through space, for example, although the player cannot fly upside-down or adopt any other non-normal attitudes with respect to the ‘ground’. There is a subtle challenge to achieve balance and care for your self. The player is given time to explore, in a non-threatening way, to induce an engaged state, rather than continually watching for the appearance of enemies to appear to destroy, or the next puzzle to solve, to obtain entry to the next level. Conceptual challenge is the understanding of something new; that is deduction, observation and interpretation of this space. The game-world’s mental space is a space that is not-the-real-world, as seen in Figure 31; it is entered by choosing to play. The

fantasy environment of the game-world setting helps with players’ involvement, contributes to immersion and fantasy, meaning that it is necessary to spend time in the world.

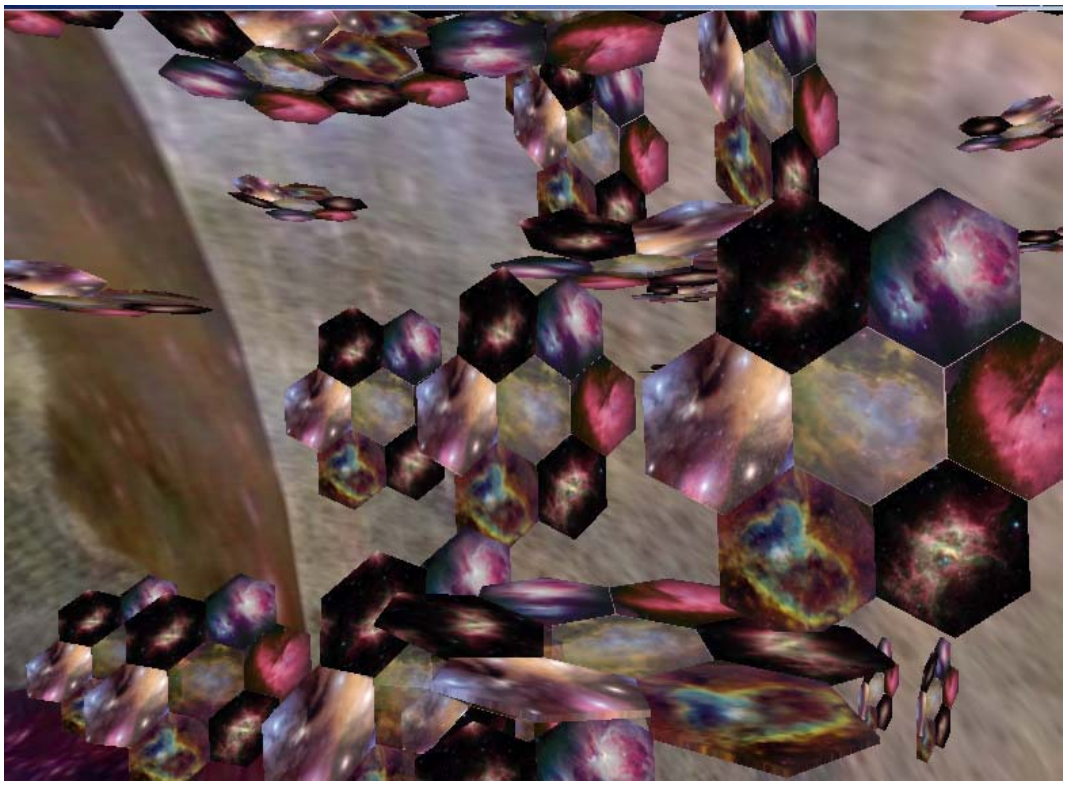


Figure 31 ‘Star World’ Screenshot Maggie Parker © 2005

Having exhibited this environment at art and computer exhibitions, I noticed that viewers engaging with the piece seemed to dissolve, engage and ‘blend’ with the environment, once they realised that there was nothing threatening to encounter and defeat. They enjoyed the time to ‘chill-out’, in a non-threatening environment. Viewers/players were much more engaged and not in an alert state, as computer gamers usually are, in order to shoot anything that threatens them or deal with a situation initiated via the game play, to keep them ‘alert and ready to defend’ (Eladahri, 2004). Some viewers/players also reported that, although they had not had much experience in navigating computer games, they quickly mastered the controls and were able to navigate around the environment with the minimum of training. Easier methods of navigating a computer game environment created, within the viewers and navigators of the environment, a confidence in their skill level. Easier navigation and mastery of basic skills produced confident navigation by participants. After engaging with the piece of work, at a particular exhibition, (see appendix VII:C), they reported; “I was really scared of computer games before, but if your environment is where I could begin to learn to play them then I would play more

games" (Parker, 2005a). 'Star World' was similar, in design, to basic shapes produced for the earliest games. From the very first CGA graphics, an example screen-grab of the game 'Lode Runner', shown here in Figure 32, shows quite a contrast between Figure 33, showing the latest graphics now available for game construction seen in this screen-grab of 'The Sims 2'.

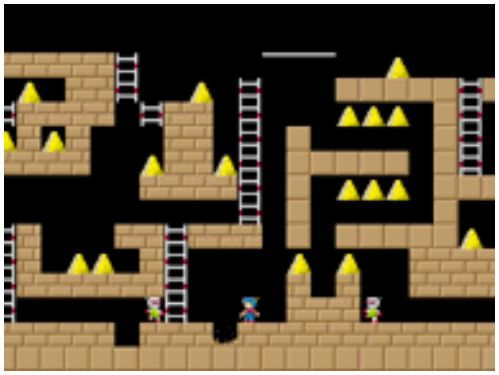


Figure 32 'Lode Runner' Screenshot (Assage, 2007)

Figure 33 'Sims 2' Screenshot (The Armchair Empire, 2000-2006)

The boundary at the end of 'Star World' is the rotating sphere, creating a temporal dimension in which time becomes meaningless and the player is 'going with the flow'. When creating this environment, the player was not given the opportunity to mix 'up' and 'down', by giving players the opportunity to turn upside-down in the environment when navigating. When this option was investigated, testers reported feeling sick, which was not the intention of this environment. The physical surroundings consist of a terrain, a sphere, animations and sculptures. The player can perceive, either, a small part of the world, or, has the option of navigating to a vantage point at the top of the world, if she or he chooses to discern their spatial positioning. These parts of the environment are all viewed by looking at the game, or environment worlds, through a monitor screen. A different way of viewing virtual worlds is exemplified by 'Dilate' (2003), a panoramic video work, by Dryden Goodwin, shown in Manchester Art Gallery. The visitor stood at

the centre of eight video screens which formed an octagonal wrap-around video and sound installation. ‘Dilate’ explored the viewer’s emotional and physical responses to a mixture of contrasting environments and landscapes, both populated and unpopulated. In a series of immersive episodes, which featured intimate and public spaces, ‘Dilate’ presented the visitor with a dynamic visual and audio experience that moves through coastal and rural expanses, to domestic and urban settings.

Viewing work, in this way, produces an alternative aesthetic to the work. When ‘Star World’, as seen in Figure 34, was viewed in the auditorium, on a 25 foot x 8 foot exhibition screen, viewers were overawed by the monumentality of the piece, “Wow, that’s amazing”, “Those colours are beautiful”, “What a fantastic idea to help me to relax” and “When is this for sale, I need it now”, were some of the comments from viewers of the piece (Parker, 2005a).

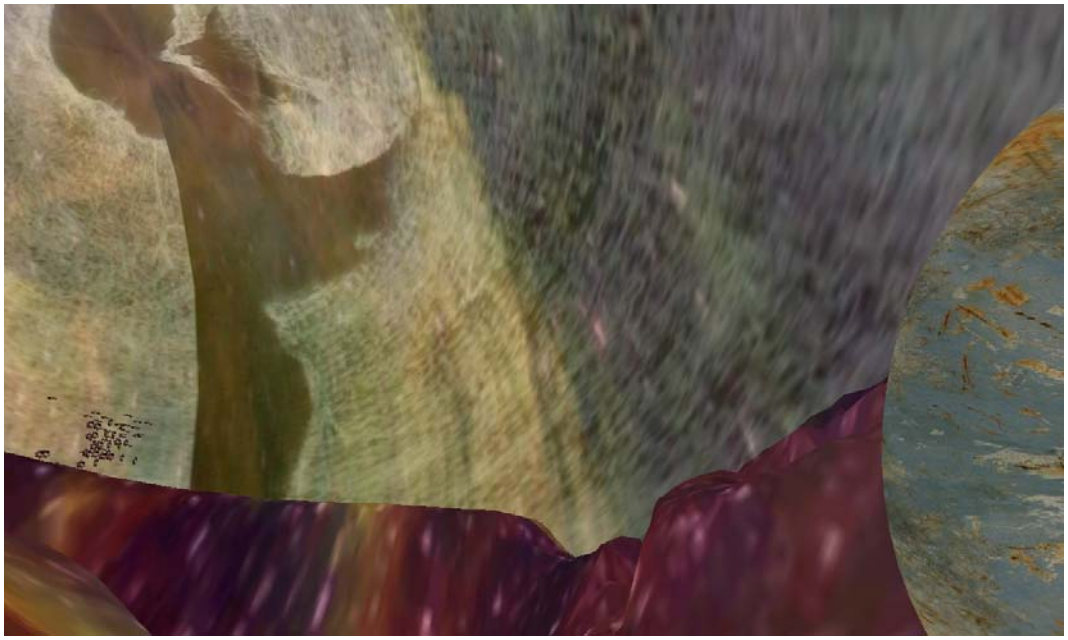


Figure 34 ‘Star World’ Screenshot Maggie Parker © 2005

These fragments of something created are changed and woven together to intensify the matrix - or surrounding structure - of the environment into a new experience. Time is examined in a different way, working in a non-linear, logical manner, obtaining a balance between intimacy and interaction, with time becoming more elastic for participants, which they commented upon, as discussed in Chapter Six.

The ambiguity of the collected images lends itself to the autonomy of the viewer to select a way to navigate through the piece. Because of the way the images are portrayed, it

challenges the viewer to engage with the piece, making the viewing experience active, the viewer negotiating how and where to look, as seen in Figure 35. Challenging the viewer into an original response, embedded with the possibilities of action, the space becomes fused with a memory map of experiences seen and heard.

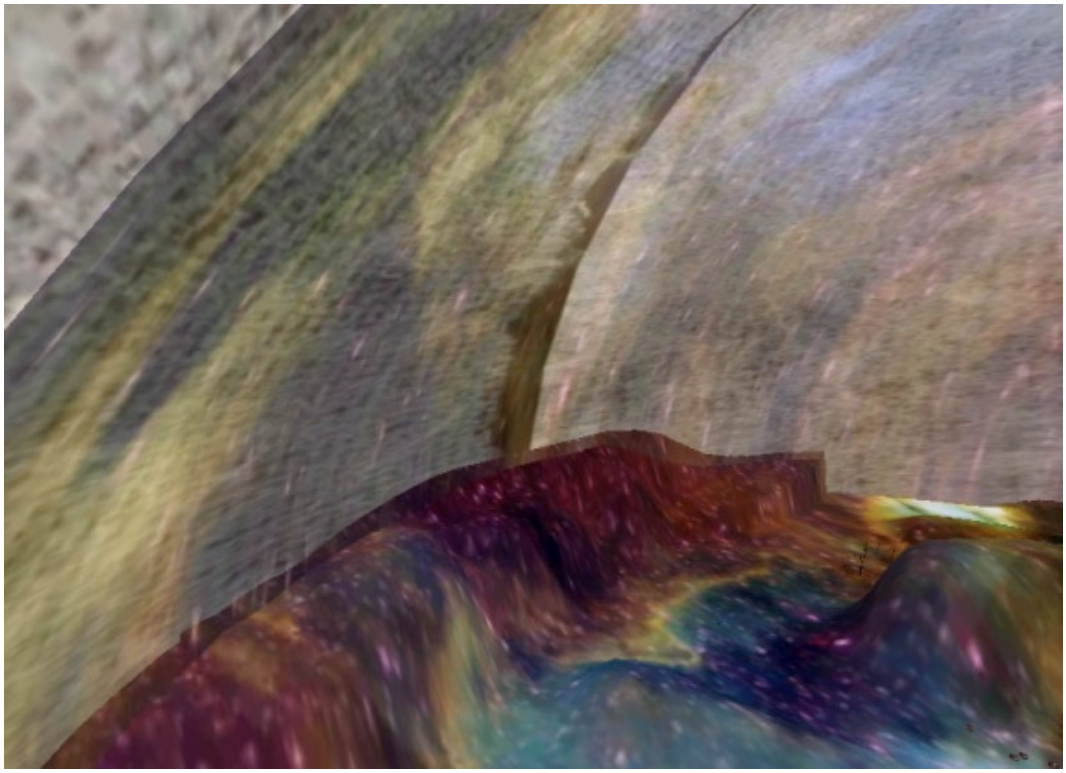


Figure 35 ‘Star World’ Screenshot Maggie Parker © 2005

This world uses abstractions that take place in an unfamiliar world; however, representational knowledge of the real world is used to create navigation, for example, to negotiate the controls to turn left, hit the left cursor key. Navigation is also possible by sound direction, clues to other areas being heard and giving intimations of direction. There are a series of puzzles that advance the plot, for example, find the sound and listen to it, find the sky and watch it, the player remaining in full control at all times of where she or he wants to go. In a static artwork, the focus is on the picture space itself and to the organization of this picture-space; all visual elements contribute as colour and form, but not as the representation of an immediate perceptual image. A traditional painting is composed of elements that serve as visual ‘clues’ to help the viewer to navigate the image. There is no actual focus entering into this virtual environment space, rather, a series of eye movements, searching for an object to focus on. How is this alternative picture plane created, using the software tools available to this author?

4.3 IMPLEMENTATION AND PRACTICAL COMPONENT

The world was built using 3ds Max version 6 and then version 7. A plane was created then manipulated, using the displacement filter. Walking in the grounds of the University of Teesside, I noticed a piece of twig lying on the path. This piece of twig was scanned, cloned and the colour, picked up from the scanned image, was replaced to create a black and white image. This image became a displacement map guide, which was aligned to the plane, to produce a landscape floor plane. A texture, taken from a picture of the stars, was then wrapped over the plane.

Two spheres were built to the same measurements of the Earth, which is a nearly perfect sphere, very slightly flattened at the poles, very slightly bulging at the equator, which is called an oblate spheroid, as shown in Figure 36.

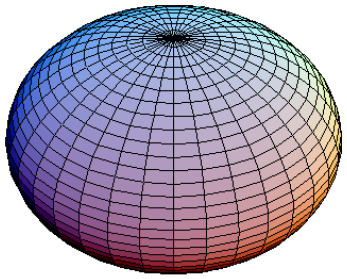


Figure 36 Oblate Spheroid

At the poles, the Earth is 12,714 kilometres in diameter, with a circumference of 40,008 kilometres and, at the equator, the earth's diameter is 12,757 kilometres, with a circumference of 40,076 kilometres. These measurements were produced by a Greek mathematician, Eratosthenes, who used geometry to calculate the circumference of the Earth. The spheres built in Max, however, were created as perfect spheres, because that can be done using mathematically-based programming. In real-world space, objects would be affected by gravity; this 'earth', therefore was slightly different to the actual shape of the Earth, but otherwise correct in measurement.

The outside sphere was slightly increased in size, to give an impression of there being something behind the inside sphere; normals were inverted and a star map was textured onto the inside of the sphere. This sphere is not animated and stays in place wherever it is glimpsed on navigation through the world. The inside sphere's normals were flipped; this

made the texture appear on the right side, when looking up at the rotation of the sphere. This inside sphere was wrapped with texture from handmade paper from Bali.

The torn edge on the paper produced an unexpected torn edge to the image, through which the outside sphere could be glimpsed; this enhanced the viewing experience, so was left as it was. The transparency of the second inside sphere was reduced, to enable a glimpse of the outermost sphere, giving an illusion of depth and adding three dimensions to the piece. This way of working is an artistic method of unexpected accidents happening and becoming part of a piece. Lateral thinking and connections were used, creating an opportunity to alter the conventional method of making a 3D computer-game world; handmade paper texture, firstly, would not have been used at all and, secondly, if it had been used, it would have been perfectly wrapped to the inside sphere. Figure 37 and Figure 38 illustrate the construction and texturing of ‘Star World’ in the modelling stage.

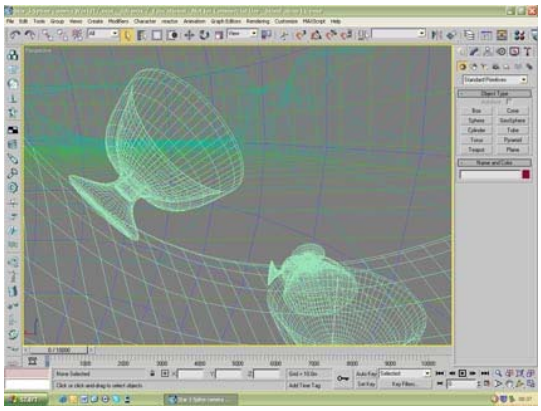


Figure 37 ‘Star World’ Construction model Maggie Parker © 2005

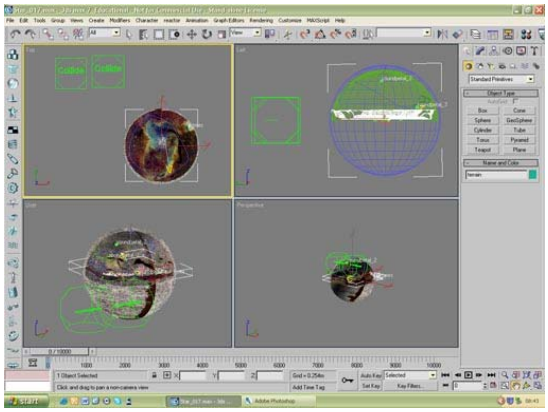


Figure 38 ‘Star World’ Texture model Maggie Parker © 2005

The inside sphere was animated, to produce a slow, languid movement of rotation, which was done deliberately, to induce a calming atmosphere for a player; fast movement produces more alertness in the person playing a computer game. From personal

observation, it was noticed that gamers continually do the ‘game-run’ (author’s description), that is, speeding around a game-environment in the quickest time possible.

The control speed on the environment is set so that it is not possible to achieve a ‘game-run’. The height of the avatar is set at 1.00 metre and the bump area as 0.25 metres. This gives the impression that the player is in a huge area of landscape and allows the player to get really close to the landscape and sky areas before being repelled. The player, literally, is able to ‘fly’ through abstract objects in the game, as no collision detection is added to the objects. The field of view is rendered at 60.00 metres, with the near clip 0.2 metres and the far clip 1000 metres, adding distance to the environment. Low angles are traditionally used in film to make a character appear bigger, stronger, or menacing; they also help to exaggerate environments and architectural space. High angles can make a character look small, weak, threatened, or childlike. Environments can look small and unimposing when shot from high angles. Changes to the field of view, or the lens angle, can help to create a feeling of depth and distance, if the angle is wide. In ‘Star World’, low angles are used, by making the avatar size tiny and able to get really close to the environment surface and sky-spaces.

The player has almost full control over where she or he is in the environment, including ‘flying’, ‘walking’ and choosing camera angles. Collision detection was applied to the landscape floor and the inner rotating sphere. At the very end of the world, there was a glitch in the texturing and advantage was made of that, with the glitch becoming part of the game-play puzzle. Collision detection did not work here and the player can discover the underneath of the environment, then navigate to outside the dome, as seen in Figure 39, although none of the players actually discovered this, in the game experimentation period.

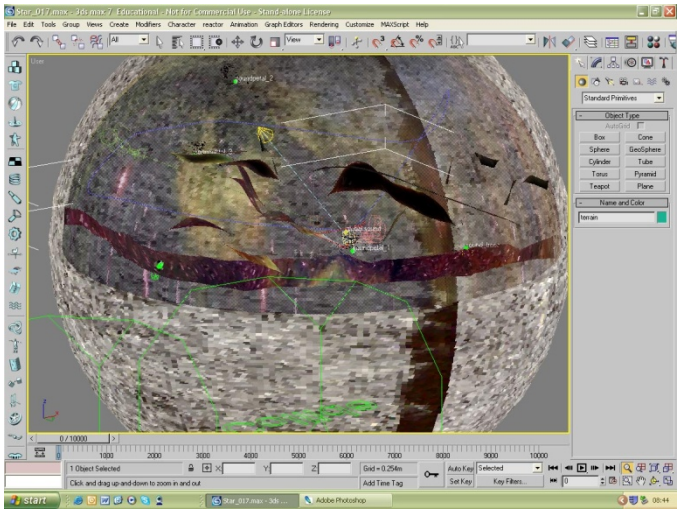


Figure 39 ‘Star World’ Underneath game play area Maggie Parker © 2007

Hexagons were made which have an animation time of 200 out of the 1000 animation frames. The animation takes place for only part of the player’s experience when navigating ‘Star World’. These were built by making boxes, then altering the geometry of boxes to make geometrical shapes. These shapes were then textured with star maps from the ‘Astronomy Site of the Day’ website. One of the textures used was created by scanning hand-made paper, shown in Figure 40 and adding it to the inside sphere. Other textures included adding copper texture from the software’s library of textures and star pictures, of which an example is shown in Figure 41, from the web site (NASA, 2003). Permissions were sought from the relevant copyrighted credits for the use of this imagery.

Figure 40 Hand-made paper scan

Figure 41 ‘Inside the Eagle Nebula’ (APOD) 2004

Individual hexagons were joined together and cloned to produce abstract shapes. This idea originated from previous experience as a botanical artist; these shapes represent

flower petals in an abstract form. Although, in cyberspace, any kind of texture can be applied, textures in ‘Star World’ were used to represent space and the infinity of the special opportunities. These hexagon groups, as shown in Figure 42, were positioned in such a fashion as to float above the ‘ground’, thus creating abstract situations, in which real-time conventions are not adhered to. One would expect to find a flower growing from the ground, for example, but in cyberspace, flowers can grow from any direction, being created from only light and pixels.

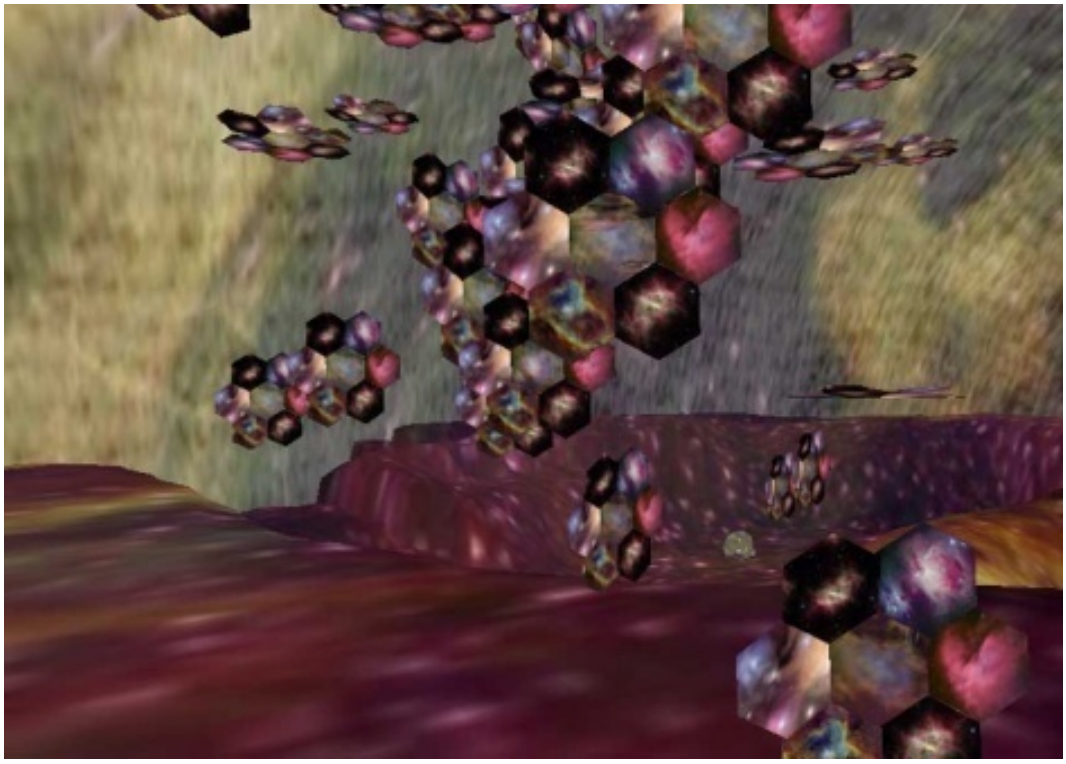


Figure 42 ‘Star World’ Hexagon Shapes Screenshot Maggie Parker © 2005

Tree shapes were created. Using the cylinder tool and shapes cut out parts of the tree shapes to represent branch holes and variations in tree bark, as shown in Figure 43. These shapes were then made into different colours and made semi-transparent, using the ‘maps’ command, in the ‘material editor’ of the software. These objects are there to initiate a resting place, to stand still and explore that part of the environment.

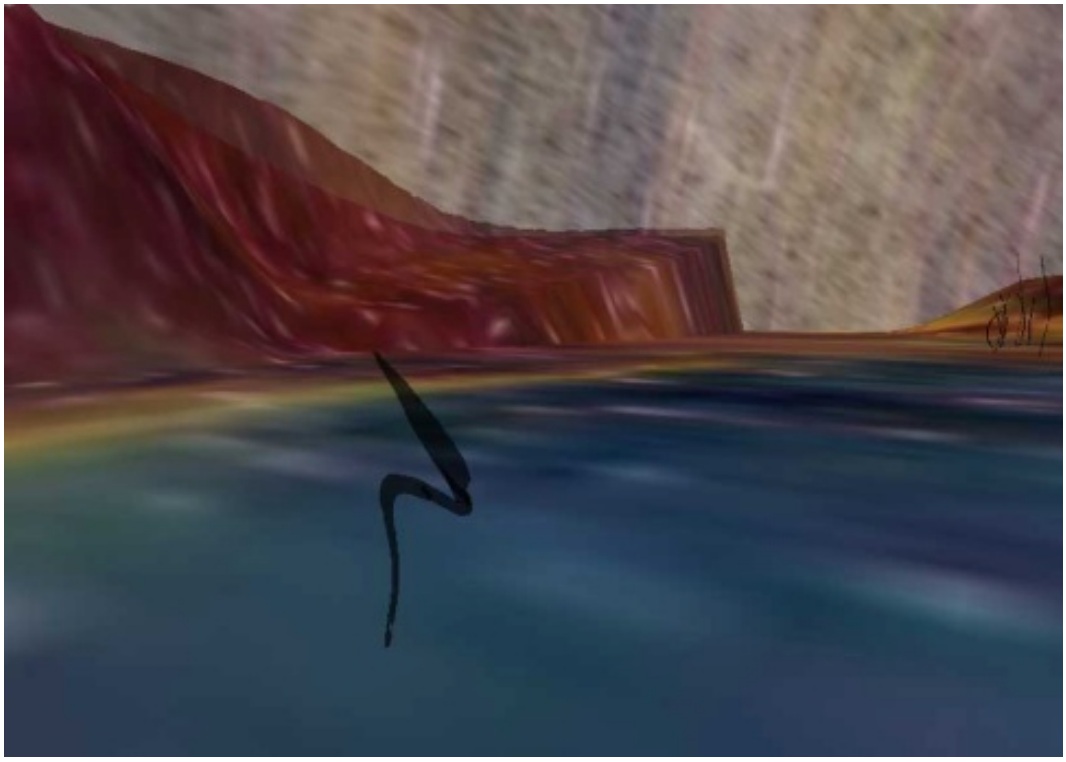


Figure 43 ‘Star World’ Tree shapes Screenshot Maggie Parker © 2005

Embedded in some of the objects are sound pieces. These pieces include suggestions recorded personally, on simple voice-recording software and a microphone. Some of the recorded spoken suggestions were recorded, saying, in a gentle, quiet voice, “Listen to the Wind” “Unwind” and “Calm Down”. The positions that the sound suggestions were placed in the environment are shown in Figure 44.

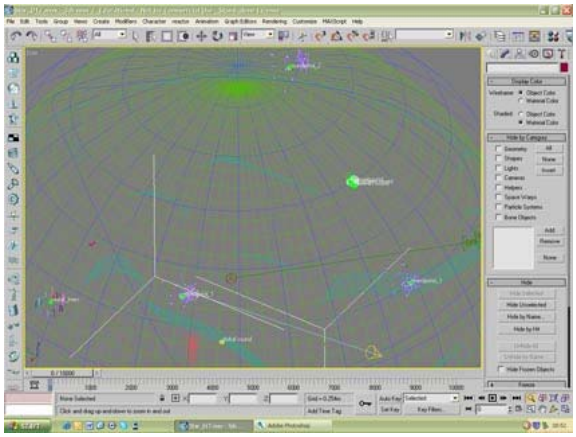


Figure 44 ‘Star World’ Spoken Suggestions Screenshot Maggie Parker © 2005

In creating realistic scenes, the way a scene is staged can impact on the realism and is an obvious trait of reality; reality is chaos, but there is an order within this chaos; combining order within chaos creates a believable scene. In virtual-reality art, expectations are raised and personality is reflected in the surroundings. These abstract shapes work

together with viewers' expectations and the scene, to stimulate an internal narrative. Objects have undeniable attributes and detailed familiarity, which will convince the viewers that the rest of the objects are real too. "Art is better when the user is inside and part of it rather than just watching it" (Crawford, 2006). This is the magic of game-playing and what it can give to the creation of art pieces and game study; it creates spatial situations and the freedom to move through space. 'The Sims™' (Electronic Arts, 2000) have their own language and 'Bill and Ben', characters from the 'Flower Pot Men' spoke their own unintelligible language called 'oddle poddle', for example, "Hello, Little Weed" came out as "flobadob, Ickle Weed", to which Weed would, inevitably, reply "Weeeed" (Lingstrom & Bird, 1952-1971). Formal processes arrive at a procedure, making us think logically, but 'fuzzy logic' makes sense of the game world. Fuzzy logic allows for set values to include inherently imprecise concepts and enable inferences and essences of interaction, coming from signifiers and narrative, to create meaning, illustrated by the imprecise language of the 'Flower Pot Men', the 'Sims' and also illustrated by the several different descriptors given to the hexagon shapes. As discussed in Chapter Five of this thesis, abstract shapes created within 'Star World' were described as "flying saucers, flowers, or birds". Part of the exploration of 'Star World' was to investigate whether an object could hold its original meaning, refining, in 3D space, the object's subtlety and functionality, testing whether 'less is more', when constructing an object, would hold true for the object's identity. Creating an abstract hexagon shape allowed several different personal interpretations. Abstract shapes became important as 'fuzzy areas', which allowed unexpected interpretations.

4.4 LIGHTING WORKFLOW

RTRE is a piece of viewer software added to 3DsMax to allow real-time alteration and navigation of models. This is used, mostly, by architects who wish to show a client around a building, while making alterations that show instantly on the screen. This software had the advantage of creating a file that allowed 'Star World' to run on other windows-based computers, as a published .exe file. The default lighting package in RTRE was used with 'Star World', as the effects gained from the render were acceptable for the created imagery. Omni lighting, which casts a light from a point source in all directions and directional lighting, which uses a single vector to describe shadows and ambient lighting, were used to create the 3d model in 3DsMax, then RTRE rendered this

lighting, in an acceptable lighting render. Three-point lighting, which uses a key-light, a fill-light and a back-light, was experimented with. This form of lighting was not used, as the lighting in this particular piece was sufficient with the rendering software. Objects are not lit, directly, from a light source, unless they are specifically set up that way. In a photographer’s studio, or on a film set, most illumination is due to radiosity, which is light bounced between objects. Usually, objects require a ‘bump map’ to link believability to an object; this is added by introducing dirt and dust, ageing objects in a realistic way; with dirt and dust added around the scene ensures that the scene adds specific and motivated detail. Flaws and scratches add extra depth, while objects that are handled need to have thickness and wear-and-tear added to them. This, however, was not relevant, in the creation of the environment, ‘Star World’.

The overall sound in the environment is the blowing of the wind across a Welsh hillside, influenced by personal experience of the aesthetic quality of the sounds there. On arriving in the centre of the groups of hexagons, the sounds of birds can be heard, including a chaffinch, nightingale and an owl. These sounds were programmed to have an echo to simulate hearing the sound in a large, open space. The sounds were the most difficult thing to programme. Due to limitations of the RTRE plug-in, the problem of getting these sounds to play, as well as the overall global sounds, have not yet been resolved at the time of writing. The global sound of wind on a Welsh hillside has been incorporated, when navigating the environment; however, the piece can be navigated without the missing sounds affecting the integrity of the piece. Some of the sound pieces are shown in Figure 45. They can be seen as green lines, showing the extent of the sounds incorporated, but not implemented, in the final rendering.

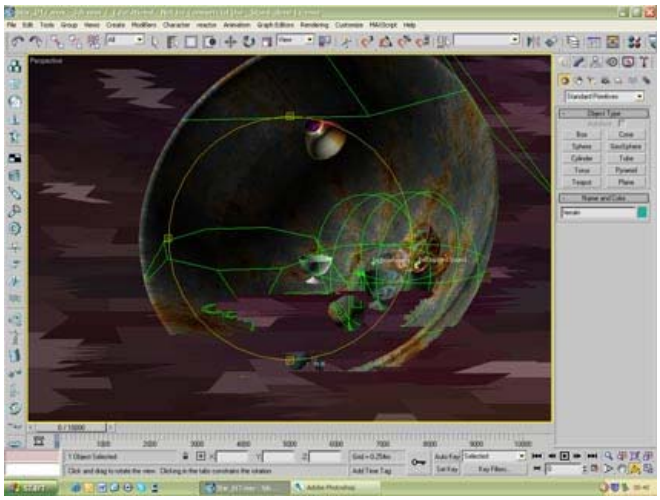


Figure 45 ‘Star World’ Sound pieces Screenshot Maggie Parker © 2005

The software package, RTRE® was used to create the published environment, which allows real-time interactivity for navigating around the computer-generated world. Interpretation of the imagery used in abstract situations is such that these images have no meaning in the real world. Writing of our very common practice of surrounding images with words, to help in our interpretation of the context that these images are viewed in, Barthes (1964) states, “[t]hey imply, underlying their signifiers, a 'floating chain' of signifieds, the reader able to choose some and ignore others”. This environment had no text to help with the meaning of the imagery; players made their own interpretation and meaning, creating their own personal narratives.

4.5 COMPARISON OF GAMES

When comparing the environment to other computer games, there are a number of aspects to be considered (see Table 4), for example, game play is basic action and there is no story as the player progresses. There is no character for the player to become; the player can interact in their mental-space, creating a new self-blending with the environment. There is no enemy to attack, no weaponry to collect and the player can only navigate at a slow pace; there is no opportunity to do a ‘gamers-run’. Shown in Table 5 is a game comparison between ‘Star World’, ‘Half Life’ and ‘Myst’. While there are comparisons such as genre and environment, ‘Star World’ has no puzzles to solve by interacting with special objects, to open or find out what is behind anything.

TABLE 7 COMPARISONS BETWEEN GAMES: COURTESY OF DR ALAN HIND

	'Star World'	Half Life	Myst
Game Play	Basic action minimal navigation	1st person Shoot-em-up with elements of adventure	1st person puzzle
Genre	Adventure Puzzle	Atmospheric blast and destroy	Adventure, Puzzle,
Development of Game Play	No story as you progress	Linear storyline (adventure element) as you progress	Story as you progress
Interaction with Other Characters	No interaction; need to listen to the commands as you move through the space to interact with voice suggestions	Need to speak/listen to characters as you move through the game-even interact and get a character to follow and co-operate with you	Need to interact and get a character to co-operate with you
Environment	Large open terrain with secret underworld	Corridors with small/medium size open areas	Large open terrains with several buildings
Player Representation	There is no avatar for you to become	Character can also interact with larger environment weapons	Character is the player
Actions	Waft through space	Jump, duck and climb	Navigate environment, interact with books, doors, etc, navigate through mazes
Status of Game Play Players Health	No loss of anything no HUD	Loss of health if you jump off from too high a platform or fall down a ladder	No loss of anything
Opposing Enemy Characters	No enemy attacks-little intelligence	Enemy attacks/retreat - lots of intelligence	Enemy is revealed through puzzles
Activity in Game Space	Very little else going on	A lot more incidental character activity happening within the scene	Very little going on until a book is opened for example.
Weaponry	No weapons	Real and futuristic weapons	No weapons
Beginning of Game Play	Simple start-quickly into the meditative world	Interesting engaging start -draws you into the game (need sound to hear the professor speaking)	Opening shot enter into game world through temple
Ending of Game Play	There is no ending the end is when you decide to leave the game	Ending leads you into a continuing story	Mission completes-what's the reward? Simply go on to harder mission?
Progression through Game	Game is up-down forward-back movement	Although the underlying game is linear-you are not too aware of this	Player gradually becomes aware there are puzzles to solve etc
Frame Rate and Resolution	Frame rate and resolution good	Frame rate and resolution good	Lack of high-end 3D and animated visuals

The created environment, ‘Star World’ enables players to do impossible things, such as walking, then being able to fly through a monumental space, across the sweep of a world-space, enabling the investigation of binary oppositions, between cosmic and human scale. One way to practice meditation is to view large empty spaces, in order to achieve a state inducing a loss of self-identity. One of the suggestions of finding a space to induce a meditative state, in ‘Star World’, is to sit outside, under a tree, in an open space. However, at the Austin Game Conference (see Appendix VII:G), attended by this author, via a Microsoft scholarship award, in one speaker session, Damion Schubert (2005), lead designer at the game studio, ‘Wolfpack’, talked about similarities between casinos in ‘Sin City’ and 3D worlds like ‘World of Warcraft’, ‘EverQuest’ and others. Chief among his suggestions to developers was to look at the way Vegas casinos handle the use of space and apply lessons learned there to online games. He explained that people did not like gambling in the large, wide-open spaces often found in casinos like Vegas' Aladdin, preferring cosier spaces. “It was too grandiose...with poorly defined sight lines”, said Schubert. “It had a barn effect, and people don't like to spend time in barns. Players prefer smaller alcoves, low ceilings and cosier experiences”. With that in mind, Schubert urged those gathered for his talk to focus the design of their virtual worlds around the creation of smaller game-zones, where players do not feel alone. He said that it would enable them to feel social, even when there are not a huge number of other players around. The alternative, he said, is large game spaces, where players feel lonely, unless many others are nearby.

4.6 OPEN-SPACE ENVIRONMENTS

I argue, however, whether players would feel lonely in large open-space environments? One of the many reasons for creating large pieces of artwork is to explore space, as seen in Jackson Pollock’s large canvas pieces, such as ‘Autumn Rhythm’ (1950), shown in Figure 46.

Figure 46 ‘Autumn Rhythm’ Jackson Pollock 1950

Pollock sought to draw the viewer into the canvas by conceptually eliminating the frame, to permit the eye to follow a curvilinear pattern beyond the canvas into the surrounding space. In creating these paintings, his intention was to permit the viewer not to be stopped by the edges. “The freedom afforded to creative people by demolition of the canvas edge freed painting from 2 dimensions” (Kaprow, 1958). When speaking about his work, Pollock said, “[o]n the floor I am more at ease. I feel nearer, more part of the painting, since this way I can walk around it, work from the four sides and literally be in the painting. When I am in my painting, I'm not aware of what I'm doing. It is only after a sort of 'get acquainted' period that I see what I have been about. I have no fear of making changes, destroying the image, etc., because the painting has a life of its own” (Pollock, 1980).

Schubert encouraged the games industry to create smaller, more intimate spaces, but participants navigating ‘Star World’ did not mention that they would have preferred a smaller, more intimate space. Participants separated the size of the world-space into zones according to what their own internal self-narrative defined. They interacted and engaged with the objects within the space, naming each object. They were intrigued by the strange texture used on the sky and this self-narrative enabled a large space size to become manageable to the participants.

4.7 PARTICIPANT REPEATED FEEDBACK

The piece, ‘Star World’ was shown, subsequently, in the Digital City exhibition, held in the Centre for Enterprise, in the University of Teesside (Parker, 2005b) and at the ‘Playful Subjects’ Conference (see Appendix VII:D), at the University of the West of England

(Parker, 2005c). ‘Star World’ has also been shown at the Department for Fundamental Physics at the University of Durham, in a group exhibition with other artists, which is discussed in more depth in Chapter Seven. From these exhibitions, information was collected from participants, in the form of written comments and general oral responses. After the navigation of ‘Star World’, viewers were invited to describe their experience of navigation, using their own words, in a retrospective, ‘think-aloud’ protocol, in which information was collected by written format; this was transcribed from oral conversation. These comments of repeated experiences were collected and documented and are shown in Table 8.

TABLE 8 REPEATED EXPERIENCE 'STAR WORLD' DIGITAL CITY EXHIBITION APRIL 2005

Comments after 'Star World' navigation	Type of Person	Age range
It was relaxing	male game player	18-24
I didn't feel threatened	male game player	18-24
I liked the idea of not 'doing the game run'	male artist	18-24
Beautiful colours	female game player	18-24
Sound was eerie	male game player	24-35
I wanted more of this game to explore	male game player	24-35
It was nice not to be shot	female game player	25-35
It was easy to navigate	male non-game player	40-50
I felt relaxed after a couple of minutes	female artist	40-55
Easy to navigate and beautiful to look at	female artist	40-65

Although this was not part of the exhibition's focus and aim, it was observed that, when players were navigating 'Star World', there appeared to be a 'transformation' point where players engaged and moved into the space, starting to enjoy the experience of not having to be 'alert and ready to defend'. Although many of the exhibition visitors had never tried a computer-game environment, previously, therefore, they would not, necessarily, have been 'alert and ready to defend', they all reported that they found it was easy to use the controls and navigate the environment. Some artists enjoy creating spaces in which anything can happen, allowing viewers these spaces to navigate images and create their own dialogue with the pieces produced in these spaces. Others want to specify, very tightly, what viewers will experience of their artefacts, just as in a game-space, designers need to know where their players will go and see, to implement the next game continuation.

There were many possible ways to build this environment and different methods to render the published world, for example, as wire-frame, or sketch options.

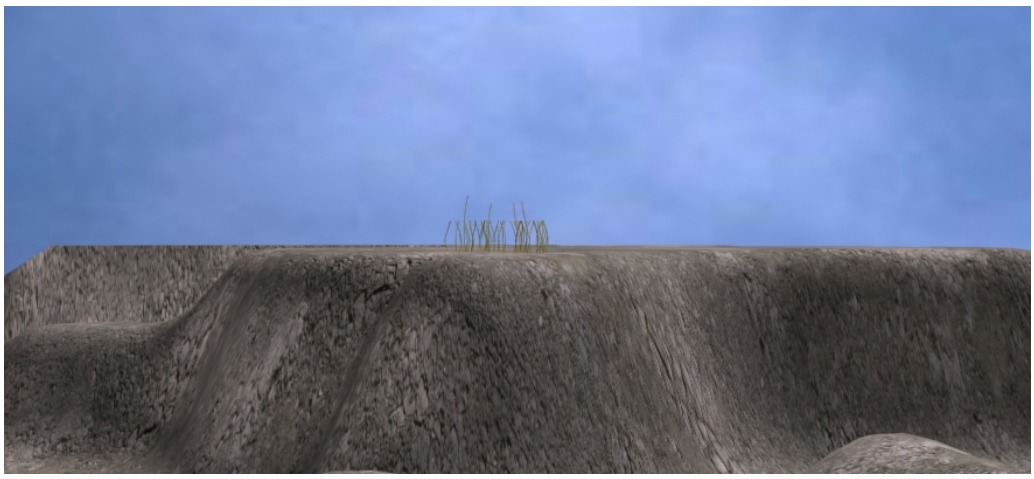


Figure 47 Texture Test

An example, of one of the other experimental worlds I produced, had a grey dirt texture, wrapped around the landscape and tree shapes on the plateau, shown in Figure 47. These were changed to the finished pieces, as seen in ‘Star World’, because the saturated colours obtained from the texture that was eventually used proved to be more seductive and inviting than this coarse grey texture.

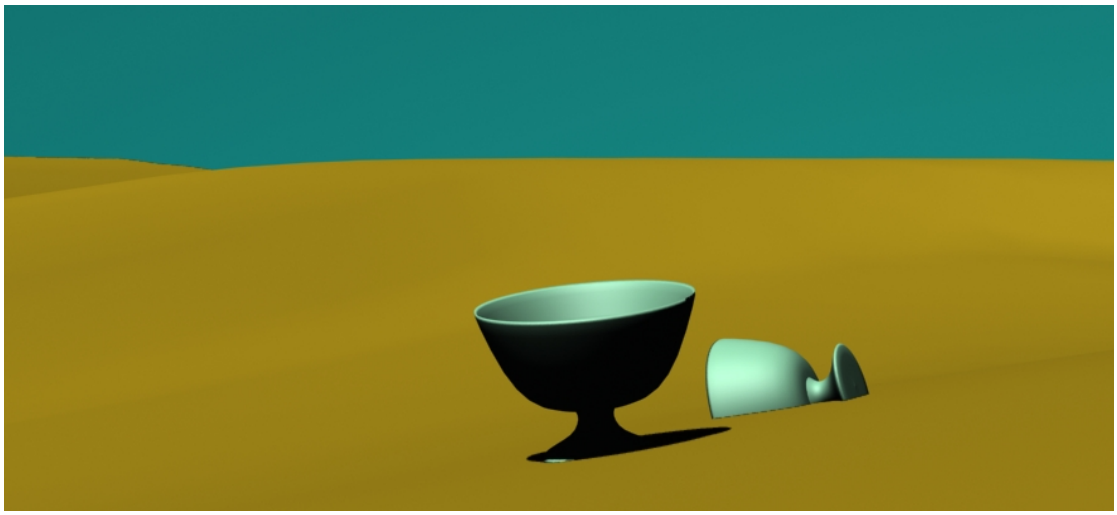


Figure 48 Texture Test

The goblet shapes in Figure 48 were wrapped in texture, which was a result of experimentation with the textures available in the 3dsMax software. Another texture test, as shown in Figure 49, involved wrapping gold metal textures around a globe shape; this ‘Indian World’ was not used in the final piece.

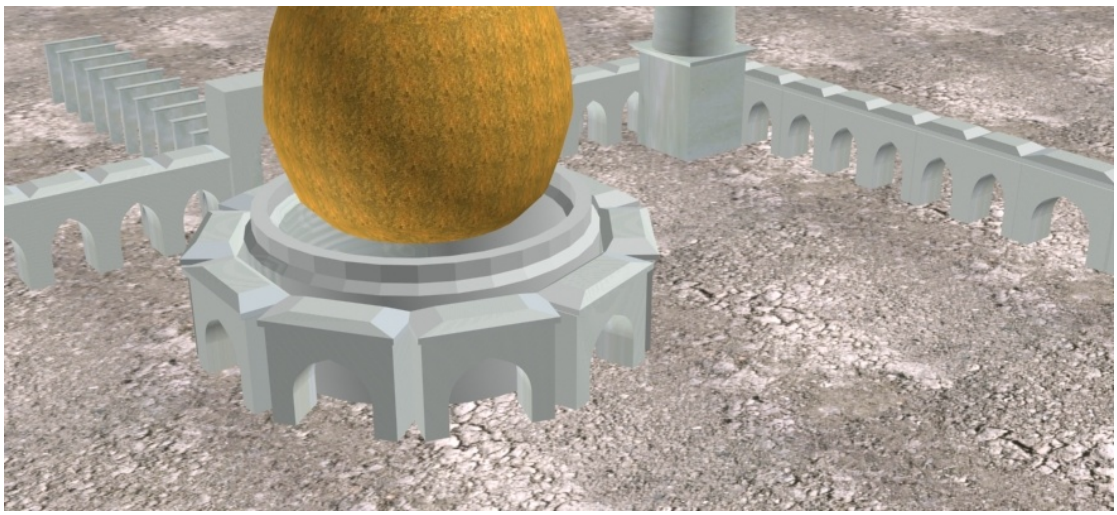


Figure 49 ‘Indian World’ Texture Test

4.8 SPACE

Space, in the abstract, was once the domain of mathematicians and explored by artists; space is important in all our lives. ‘Star World’ has been built with a wide space-view to allow free vision flow. We are shaped by our environments; thus, the structures in ‘Star World, for example, the hexagon shapes, ambiguously produce an aesthetic response, both optical and perceptual. Game-players are not allowed much opportunity to explore a particular games environment, as they are normally too busy completing and finding the next level and puzzle to solve. Engagement with abstraction (apart from games such as ‘Tetris’, which invites fitting abstract piece together) could be valid to making games, as this allowance of self-engagement allows interpretations that engage players. This invites discoveries and making self-presumptions, which offer possibilities and not finite goals. Thought-trails associating and running with differing possibilities to the original intentions of the game-play allow dialogues of self-engagement to produce deeper immersion in a game-space. Participants named 164 abstract objects (as described by the results in Chapter Five, Table 9, themes from the teach-back task). These objects were described as jet, jewels, key, lamps, moon, mouse, mug, reed, rocks, shells and tadpoles. When creating this environment, not once did I envisage any of these objects to be any of these descriptions; therefore, I argue, this allowance of self-identity interaction, blending and engagement, in an abstract sense, could be important to the future design of game-play. How can an environment be tested as to whether it is possible to create and engage with the player’s own internal narrative, while navigating and interacting with an environment? Char Davies began using alternative methods of interactivity, by placing a breath-detection apparatus on the ‘immersant’s’ navigating around her art piece, ‘Osmose’. This engaged the immersant in interacting with the environment in a totally different way, thus, producing the comments, as discussed previously. She based her environment on a painterly aesthetic, however, the environment that I created, was dual-purpose, to fulfil an empirical requirement - to test participant’s responses when moving through the environment - but it also had an aesthetic plug-in, as art practice informed the making of the piece. This identified the third research question.

4.8.1 RESEARCH SUB QUESTION 3

Could an artist-created environment, ‘Star World’, have alternative identities, as both an art piece and as an empirical test-bed, to measure participants’ emotional and narrative interaction with their self and self-identity?

SUMMARY CHAPTER FOUR

A virtual environment was constructed, not with the intention of creating an empirical test-bed, initially, but to experiment with creating an alternative aesthetic, within a virtual environment. This environment was built without an avatar, in answer to research sub-question 2; how would participants engage with an environment without an avatar to either guide or appropriate their self and self-identities? Developing this environment stretched me, personally, as an artist, exploring different construction and texturing techniques, enabling more technical expertise to be gained with software. As the environment developed and was shown to participants and viewers, the piece started to begin, both an artistic journey to explore 3D environment-creation possibilities and the creation of an empirical investigation, to investigate the participant's notion of self and self-identity. The environment, 'Star World', was built as a seductive, non-threatening environment, without a viewable avatar. This environment was not created by using 'normal' textures, such as bricks for walls, to allow participants to create their own narrative interaction, or 'blending', which, it was hypothesised, would allow participants to bridge their 'strange space', to access personal self and self-identity, to create their own interpretation of the space. 'Star World' was my response to the possibilities of using software as artistic interpretation and an alternative method of game-design. This was as a result of asking whether artistic and empirical models of practice can be used to formulate and introduce diverse aesthetics into a computer environment (research sub question 3). This realistically-conceived environment contains wholly imaginary, aesthetic elements to experiment with alternative texturing. It became a virtual-environmental empirical test-bed, as well as an art piece, based on personal interaction and engagement. This double functionality is a function that, I argue, game studies scholars and computer-game designers should take into consideration, in the future. Comments from participants who navigated the environment, when shown at art exhibition scenarios, indicated that this was a different interaction, communication or blending from any that they had previously experienced, when interacting with any other computer game that they had ever seen before. In the next chapter, empirical studies were devised and implemented to observe, record, and classify the participant's reactions and responses, when navigating and interacting with 'Star World'.

CHAPTER FIVE:
EMPIRICAL INVESTIGATION: EXPLORATION AND RELAXATION

5 OVERVIEW

This chapter presents an empirical investigation, to investigate responses from participants' navigation and exploration of 'Star World'. This artistic abstract computer-game environment becomes an empirical test-bed to create, assess and measure dialogue, interaction and blending with the players' own internal self, specifically mood changes. Player's mood-states, when resting quietly, are compared to navigating and interacting with the virtual environment, 'Star World'. The results of the investigation are analysed and discussed.

5.1 INTRODUCTION

What happens when participants are sitting quietly, concentrating on their breathing, being asked to breathe regularly for a ten-minute period, as opposed to navigating an interactive environment, 'Star World'? Could a computer game be as calming as sitting and quietly concentrating on your breathing? Many people are playing 'casual games' and recent research findings demonstrate that U.S. adults, both male and female, play 'casual' games, for a quick, mental break. A survey, conducted by RealNetworks® (Lounden, 2008), states many reasons why people play these casual games. They include "74% who cited mental exercise, 41% picked stress relief/relaxation and a reported 8% said that they derived actual relief from chronic pain and/or fatigue". Surveys, such as those conducted by specialised companies, are continuing to find positive results and benefits from different genres of game playing. They state that playing casual games for a few minutes per day may help to improve mental health and relief from pain. If casual games can produce these kinds of response, what extra benefits could be accrued from an 'haute game', aimed, specifically, at creating relaxing spaces, for players to take the time to unwind, which are targeted towards player relaxation? If this technology has such power, why not use it in a nurturing, supportive way? This was discussed in Chapter Two, when investigating work by Kristeva. Haute games can be used to stimulate the mind and combat loneliness, but also to create relaxing environments. A recent article in the 'New Scientist', describes the brain as; "a muscle that needs to be used continually, to retain its knowledge", if this is true, then perhaps the brain could also be allowed to have time to relax. This may allow interaction to take place in a nurturing, kind way, from which alternative mood states could emerge. If, as stated in the article, "important cognitive processes…can be improved by training", then alternative interactive and

immersive scenarios need to be developed, to have a more encompassing experience of using interactive entertainment, especially, as, brain training, it has been hypothesised, could be a 'miracle cure' for mental illnesses, such as schizophrenia and depression (Lawton, 2008).

5.2 COMPUTER GAME MYTHS

Myths about computer games include their reputation as violent and only played by young, male adolescents, but describing all digital entertainment as games does not distinguish between different types of digital environment. 'Interactive entertainment' would be a better and more general term to describe these types of interaction. "They are the things you think you know when you know nothing else about games and that makes them especially hard to combat" (Rossignol, 2006). Some people believe that 'Second Life' is not a game, but, when negotiating this environment, one can fly, find things, explore, some of the common game elements. As shown in Figure 50, my character is exploring the landscape around a couple of water features, before flying away to explore another area. That is part of why I visit 'Second Life'; it gives me a chance to do what I cannot do in the real world, due to gravity keeping me on the surface of the Earth.

Figure 50 'Second Life' Character

As stated above, a common myth is that players of computer games are all adolescent males, but market research by several reputable companies and Internet magazines, widely reported on TV and printed in newspaper articles, has shown that the over-50s are one of the most rapidly-growing demographic groups of Internet users. In much the same way that casual games are easy to pick up, the environment, 'Star World', created by this

author, is easy to pick up and also to leave. It is not meant to be played for hours and hours and it does not have several levels that need to be completed.

At the Women in Games conference in 2005, the audience were invited to participate as follows; "After a long day at work and feeling totally stressed, come in, sit down, pour out a drink (alcoholic or not!), switch on this game, put your feet up, relax in this non-threatening environment, with wonderful colours and sound, then, 10 minutes later, feeling refreshed and relaxed, go and play your 'beat-em-up', 'shoot-em-up' computer game" (Parker, 2005). At the CGIV conference in Beijing (see Appendix VII:F), I informed the audience that "[t]his will be the only presentation where, if you are all asleep after the environment was demonstrated, then it will have been a successful presentation!" (Parker, 2005). Games, with beautiful graphics, exploration and slow pacing, are mostly ignored by hardcore game-players as being too easy. How does a player know if they are engaged with an environment, blending and immersing self and self-identity with an environment? Is it possible to enter a relaxed state, when navigating an environment to blend self and self-identity in a loving connection? The following statement was tested in the experiment described in this chapter; is it possible to create a computer-game environment that would gently seduce a game player into a different state, whether engaged or other? For the purposes of the experiment, I tried to establish the effect of a relaxation exercise on a participant's mood-state, in comparison with the effect of navigating a virtual environment ('Star World') without any threatening game-play involved in the navigation. Game players often state that they play games to relax, when, in fact, because of the game-play involved, they are often highly "alert and ready to defend" (Eladhari, 2004).

5.3 METHOD

Two separate activities were devised to test participants' responses to the stated question. Participants were asked to sit for a period, relax without any activity, then at a later, or earlier date, to navigate the computer-game environment, 'Star World', created by me, as both an artist and researcher.

5.3.1 RESEARCH DESIGN

A repeated-measures design was used, with intervention (relaxation exercise, or navigating a computer-game environment) as the independent variable. Participants in

Group 1 performed the relaxation exercise first, then the 'Star World' navigation exercise at least twenty-four hours later. Group 2 participants took part in the 'Star World' navigation at least twenty-four hours before the relaxation exercise. The two different orders in the experiment were included to counteract any order effect on outcomes. All participants experienced both interventions.

5.3.2 PARTICIPANTS

Because people of any age could play a meditative computer game, this investigation was aimed at a wide and disparate range of ages and included both computer-game players and non-computer game players. The purpose of the experiment was to measure the level of relaxation when undertaking a traditional relaxing exercise and comparing it to navigating a computer environment intended to be an aid to relaxation. For the experiment to have valid results for the computer game industry, computer game playing males were included. Also taking part in the experiment were a group of older adult females, with the rest of the participants being male and female of mixed age ranges and computer experience. Participants' ages ranged from 21 years old to 56 years old. Requests for participants were disseminated throughout the building where the experiment was to take place and this method of recruitment proved effective. There were four hard-core male computer-game players and five hard-core female computer-game players. Eight males described themselves as non-computer-game players, as opposed to five females. No males described themselves as casual computer game players, as opposed to six females who readily admitted they played computer games intermittently.

5.3.3 MATERIALS AND EQUIPMENT

Before and after their participation in each exercise, participants were asked to complete a mood questionnaire, the Profile of Mood States-Short Form (POMS-SF; see Appendix I), designed by Curran et al (1995). Participants were asked if they did any relaxation exercises, or meditation exercises. They were asked their gender and age. Physiological-testing equipment, available at the University of Teesside's School of Social Science and Law, was used. This equipment consisted of a Windows-based computer with measuring software, consisting of Biopac MP35 data acquisition unit (Biopac Systems, Inc., 2006), shielded leads, SSL57, with disposable electrodes to measure galvanic skin response and

shielded leads, SSL2, for heart rate with disposable electrodes. These were used for the relaxation part of the experiment. In addition, another Windows-based computer was used, with two interactive environments installed. One environment was used to demonstrate to participants how to navigate around the test environment, while the other 'Star World' environment was the test environment. The two interactive environments were built in 3D Studio Max and published, using the software package RTRE®. The environment, 'Star World', which was used as the empirical test-bed piece was as described in Chapter Four.

5.3.4 CONSENT

All participants were asked to complete the consent form. This form consisted of the author's name and a brief introduction, included the purpose of study, a short description of the procedure, and guarantee of confidentiality, if the participants consented to be involved in the study. The contact details of the researcher were also contained in this document. The participants were given a statement with a tear-off portion, stating their unique identification number, the researcher's contact details and the participant's right to withdraw at any point of the study. This was their only means of identification, with only the researcher allocating and having access to participant consent forms. The participants signed the consent form and at no other point were names recorded, thus ensuring confidentiality. Participants, subsequently, were given their copy of the signed sheet, while the originals were kept in a locked cabinet at all times. After the data were inputted and collated, these original data sheets were destroyed.

5.3.5 INITIAL TESTING

A pilot study was conducted with 10 participants, to test the usefulness and timing of the experiment. This was carried out by asking participants to take part in both parts of the exercise, for the purpose of judging the time that should be allowed for the experiment, before constructing the main phase of the experiment. Initial testing time was at the discretion of the participants. After a sample of 10 pilot participants explored 'Star World', the final time of ten minutes was decided. As a result of the pilot study, the text on the questionnaire was modified from font size 12 to font size 16, to enable better viewing of the answers to the mood-state questionnaire.

5.3.6 PROCEDURE

When first entering the room, participants were asked to read and sign the consent form (see Appendix II). They were given a script to read, which explained the data-collection procedure (See Appendices III & IV). Instructions were given verbally and also written on each questionnaire, which was read by each participant, asking them to indicate their responses to the questions, as seen in Figure 51. The participants had no problem reading and understanding the script and answering the questions, but they were informed that the researcher was outside the room in case there were any problems. The red figure in the bottom right corner of the photographs shows the date of the experiment.

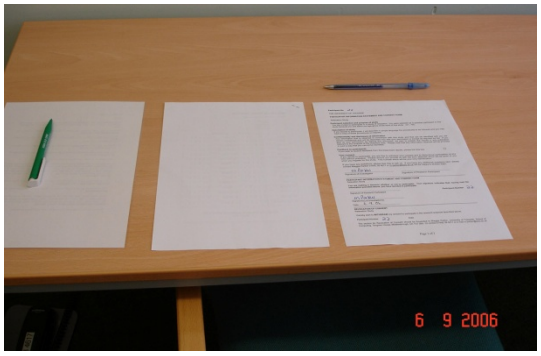


Figure 51 Layout of data collection on arrival showing consent form (script and questionnaire face down)

Because of the gap between the participants completing two separate exercises, participants were asked not to discuss the exercise procedures and results with others, until they had completed both exercises. Figure 52 shows a participant in the process of completing her questionnaire.

Figure 52 Participant filling in questionnaire data

5.3.6.1 RELAXATION EXERCISE

The exercise was performed in a quiet room, on two separate days; the same room was used for both the relaxation exercise and exploration of 'Star World' exercise. This was

important, to control variations in the indoor environment. The environment was standardised, as shown in Figure 53's left view of the room. To avoid confusion, every participant sat in the same seat in the same place, as seen in Figure 54 (the right view of room).

Figure 53 Area for completing questionnaires


Figure 54 Area for participation: Relaxation exercise

The room was in a quiet area and was approximately 4 by 6 feet, with pale green walls and a green carpet; the window was closed at all times. There was a small table facing the chair and a telephone, which was unplugged and removed from the room for the duration of the testing. Lighting was via the windows on one wall and natural light was used for the exercise. Any artificial lighting was turned off as the researcher left the room and, as the researcher re-entered the room, the artificial lighting was turned back on. The lighting was subdued, by closing the blinds. The blinds were slightly tilted open, as shown in Figure 55, for the relaxation exercise. For the exploration exercise, the blinds were fully closed and the light was turned off, to allow the participants to view the laptop monitor screen. The room was on the first floor, and a treetop was glimpsed through the slightly open blinds. Participants sat in a comfortable chair, placed at an angle which allowed them a partial glimpse of the tree-top. It was hypothesised that participants would be soothed by the movement of the leaves, the tree swaying in the wind and the

sound of the wind blowing through the leaves, although, throughout the relaxation exercise it transpired that some of the participants also closed their eyes.

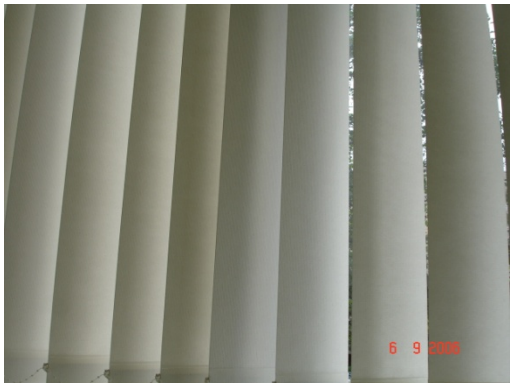


Figure 55 Position of Blinds

Physiological measurement equipment was used for data collection in the relaxation exercise. Participants were asked if they wanted to take part in this part of the data collection. Out of 28 participants, 22 participants took part. Physiological measuring leads, as seen in Figure 56, were attached to participants, to measure their level of relaxation. These leads were held in place by sticky pads, shown in Figure 57, which attach to the skin surface, through which the current ran to and from the participants to the measuring equipment. Two participants were tested before the physiological equipment was in place and a further two participants wanted to take part, but were not able to, because the sticky pads which held the electrodes in place, could not be attached to their bodies; one due to excess sweating, the other participant having moisturising cream on the skin. Two participants decided that they did not want to take part in this part of the data collection. Participants had no difficulty with filling-in questionnaires and answering questions.

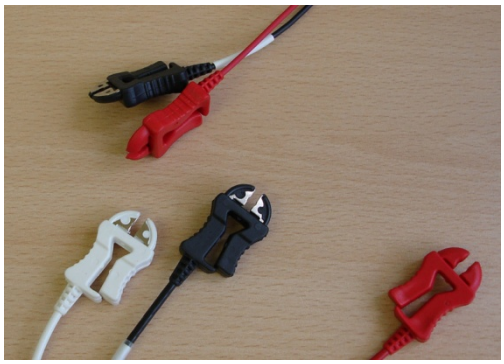


Figure 56 Physiological Measuring Electrodes

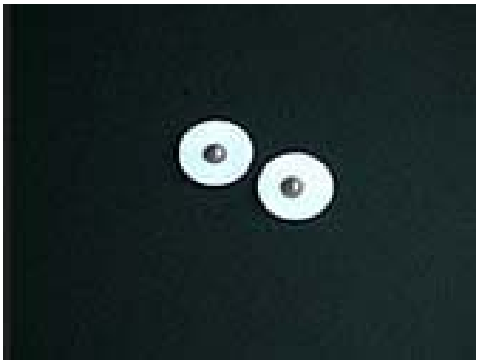


Figure 57 Electrode Pads

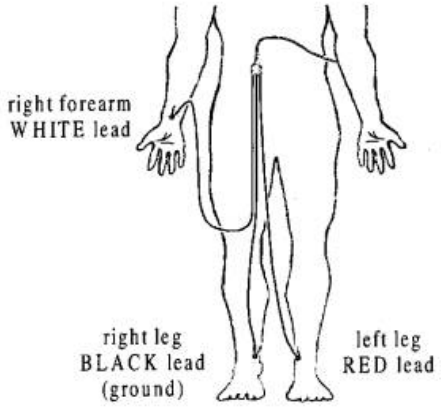


Figure 58 Heart Rate Lead placements


Figure 59 GSR Lead placements

There were five electrodes altogether which were attached to various points of the participant's body, as shown in Figure 58, using sticky pads. The ends of the electrodes attach to the nodes on the sticky pads, forming a circuit. Three electrodes measured heart-rate data, as shown in Figure 59, while two electrodes collected galvanic skin response data, as shown in Figure 60. The electrodes were attached above the anklebone on the inside of both ankles; a black electrode to right ankle, a red electrode to left ankle; a white electrode was attached to the inside of the right wrist, just on the pulse-point. These collected data used to measure heart rate. The black and red electrodes, attached to the index and second finger of the left hand, were used to measure galvanic skin response. The electrodes were attached to the data unit, using shielded leads, SSL2 for heart rate and SSL57 for GSR.

After entering the room each participant was asked to complete the POMS questionnaire. On completion of the questionnaire, participants were invited to take part in the physiological measurement. If they agreed, it was explained what this procedure entailed, beginning with the attachment of sticky pads and, at this point, the researcher ensured that the participant knew of any allergies associated with the glue used to attach these pads. Participants who took part in this exercise did not have allergies and no subsequent discomfort was recorded afterwards by any of the participants. Participants were asked to remove the electrodes and sticky pads, immediately, if they felt any discomfort or itching; they were advised to wash their hands to remove any residue, on completion of data collection. The electrode leads were attached to the sticky pads on their wrists and ankles, with the electrode cables attached, in a secure position, via a clamp, to a piece of clothing, for example, in the case of the males, their ties (if worn) or a shirt. Most of the time, the participants clamped the leads to their clothing, themselves. These leads were

attached to the physiological measuring hardware. For calibrating the physiological equipment, the participants were asked to take a breath and then relax. The software information screen, at calibration, was in view of the participants, although, during the relaxation exercise, the monitor screen was turned away from their line of sight. After calibration was completed for each participant, it was established that the participant was comfortable, when seated in the chair, facing towards the window, after all the electrodes were attached. The software was then initialised and the participant was left, sitting quietly, in the room, with the instruction, "concentrate on your breathing", given as the researcher left the room. The artificial lighting was switched off, as the researcher exited from the room. After approximately ten minutes, the researcher re-entered the room; she switched on the artificial lighting, spoke softly to the participant, to let them know she had re-entered the room, stopped the data-collection software and unplugged the electrodes. The participants removed the sticky pads that the electrodes were attached to and were asked to fill in the POMS questionnaire again. In the meantime, the biofeedback data, an example of which is shown in Figure 60, were saved with the participant number allocated.

Figure 60 Recorded physiological data

The participants were then asked about their experience of the exercise, through a series of specific questions, used for the relaxation exercise, then asked about their own observations. If participants wanted to see their physiological recordings, they were shown them on the monitor screen. Two participants wanted to have a copy of the screen-shot of their responses, which were, subsequently, printed out and handed to them, personally, by the researcher, to ensure anonymity. The galvanic skin response (GSR) measurement was analysed. This is located in the third area of the screen, shown above in Figure 60, containing the bottom (blue) line. The graph illustrates the top line reading (red) heart beat, middle line reading (green) blood pressure and bottom (blue) sweat response. Heart rate was an ancillary measure, as the software package automatically

recorded this measurement. Subsequent graphs shown will record GSR measurement only.

5.3.6.2 NAVIGATION EXERCISE

Each participant was asked to complete the POMS questionnaire. On completion of the questionnaire, participants were invited to navigate through the environment, 'Star World'. They used a computer with a mouse attached and instructions for navigation were placed on the left-hand side of the table, next to the computer for easy access. Even if the participant had used a computer before, a demonstration of the navigation tools was given, using a different virtual environment, which used the same navigation tools as those used to navigate 'Star World'. The researcher demonstrated that the right cursor key would turn the camera to the right and the page-up command would enable the participant to 'fly' through the environment, for example. To test a participant's computer skills, the participant was allowed to practice navigation with the researcher present, until the researcher was satisfied that the participant could navigate effectively.

Navigation instructions were given to the participants, both verbally and graphically, on their first introduction to the environment and were still available when they were on their own navigating the environment. The instructions were placed at the left hand side of the computer. One participant was left-handed and instructions, therefore, were placed at the right-hand side of the laptop computer, for that particular participant. The researcher had anticipated this request and had included into the procedure an arrangement to display instructions, specifically, for left-handed participants; the participant reported that there were no difficulties in this arrangement. The participant reported that they were used to using the right-hand mouse button with the index finger of their left hand and could operate the camera-view easily. After completing their navigation of 'Star World', shown in Figure 61, the participant completed the questionnaire again.

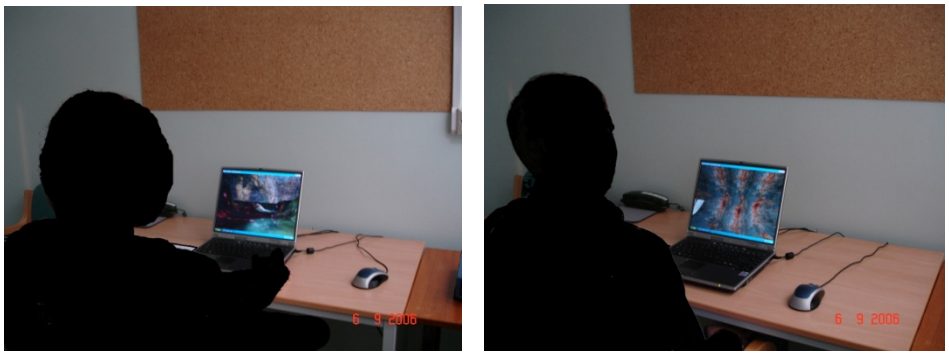


Figure 61 Participants on completion of navigation exercise

At the end of 'Star World' navigation, after a period of, approximately, ten minutes, the researcher re-entered the room and switched on the artificial light. The participant then completed the POMS questionnaire. After completing the questionnaire, the participants were invited to describe their experiences. After the 'Star World' exercise, they were asked to imagine how they would describe the virtual environment, 'Star World,' to someone who had never navigated the environment, then to remember what they felt; this retrospective, 'think-aloud', teach-back (Van de Veer, 1990) generated protocols for the exploration of 'Star World' (see Appendix V). The protocols were transcribed and examined, to see if themes could be identified. Each transcript was analysed, in terms of themes that emerged from the spoken words of the participants.

5.4 RESULTS

Quantitative data that could be categorised were coded and input to the SPSS package. Qualitative data from teach-back, after the navigation exercise and interview questions, after the relaxation exercise, were analysed separately.

5.4.1 EXPERIENCE OF THE RELAXATION EXERCISE

Table 9 represents the results of questions answered by participants after the relaxation exercise.

TABLE 9 QUESTION RESULTS FOR RELAXATION EXERCISE.

Q1 were you able to concentrate on your breathing?		
	Frequency	Percent
yes	17	60
most of time	4	14
somewhat	7	25
Total	28	100
Q2 was your breathing slower or quicker than normal?		
no	2	7
slower	23	83
normally	2	7
quicker	1	3
Total	28	100
Q3 what means did you use to maintain concentration?		
breathing	11	40
blanked mind	2	7
counted	5	18
closed eyes	1	3
watched movement	2	7
daydreamed	7	25
Total	28	100
Q4 did you close your eyes at any point?		
no	7	25
sometimes	9	32
yes	12	43
Total	28	100
Q5 Were your thoughts quicker or slower than normal?		
slower	19	67
quicker	1	4
same	8	29
Total	28	100
Q6 Was sound difficult to keep out?		
yes	1	4
no	10	36
Aware-not distracted	9	32
aware distracted	8	28
Total	28	100

Question 1 asked participants "Were you able to concentrate on your breathing?" Most participants were able to concentrate on their breathing for the duration of the experiment, 14% for most of the time and 25% some of the time. This indicates that a quarter of participants had some difficulty in concentrating on this task.

Question 2 asked participants "Was your breathing slower or quicker than normal?" Most participants reported that their breathing did, indeed, slow down. Only one

participant reported that their breathing speed increased slightly in the exercise. When questioned as to why the participant thought their breathing increased, the researcher was told, "I became stressed about doing the task correctly and, as a result, my breathing increased". It has to be noted that, in the instructions given to the participant before the task, both written and oral it was stated, "It does not matter what any other participant does, just you. There is no right or wrong way to do this experiment".

Question 3 asked participants "What means did you use to maintain concentration?" Six different ways were used to maintain concentration. These included 40% concentrating on breathing and the second most popular method was 25% daydreaming, with the least percentage, 4% (1 participant) relying on their eyes remaining closed. The researcher deliberately left the blinds in the room slightly open, hypothesising that participants might watch the swaying of the tree-leaves, glimpsed through the blinds, but, in fact, only two participants actually did this (valid 7% of participants).

Question 4 asked participants "Did you close your eyes at any point?" Forty-three per cent of participants reported that they closed their eyes the whole time, 32% closed their eyes most of the time and 25% did not close their eyes at all. These participants were the ones who daydreamed and also watched the movement of the leaves.

Question 5 asked participants "Were your thoughts quicker or slower than normal?" Most reported that their thoughts slowed down and only 4% (1 participant), reported that their thoughts were quicker. This aligns with yoga meditation methods, which is done with eyes closed, in most traditions and the mind is fully absorbed with inner events, to the exclusion of the outer world of the senses.

Question 6 asked participants "Was sound difficult to keep out?" Thirty-six per cent reported, 'no'. Sound impinged, but was not distracting to others, but only 4% (1 participant) noticed the external sounds, to the detriment of the exercise.

Comments from participants to the question "Is there anything you would like to add about the session?" included varied responses from participants. "There should be more of this in our working day", "I enjoyed the peace and quiet", "I feel relaxed" and "It is unusual at work to get the chance to sit back and relax". Overall, participants enjoyed the chance to relax and many wished that they could have a chance to do it at some point during their busy day.

5.4.2 SUMMARY OF 5.3.1

Heart rate was not used as a measurement, in this experiment, because I was interested in measuring the physiological response to relaxation and, as such, needed to control the responses of participants. Heart rate was not used as a reliable measure, in this particular measuring scenario, as heart rate is affected by physical movement, external interference and mental stimulation; heart rate increases, due to increases in oxygen, adrenalin and increased brain function. The parasympathetic nervous system, as measured by the GSR, is less sensitive to environmental factors and is a better indicator of relaxation, in this case. Means and standard deviations of galvanic skin response (GSR) were calculated for participants' first and last minute during the relaxation exercise (see Table 8 mean only). There were small changes over time, except for the range of GSR, which increased. The results show that the range of GSR within participants during the last minute was larger than in the first minute. The results of t tests confirmed these results. Using Cohen's conventions for effect sizes; (d = 0.2 (small), 0.5 (medium), 0.8 (large), the difference between the first and last minute for range of GSR represented a medium effect size (d= -0.53). This result indicates that differences between participants in the relaxation exercise increased from the first to the last minute. Mathematical data (t tests) were produced, with the help of my supervisor, Professor Paul van Schaik, who came to the aid of an artist, trying to decipher and understand empirical measurements. Inspection of the plots of GSR data (see Appendix VI), showed that GSR decreased to a minimum within the first five minutes of the exercise, then increased slightly in level, more so in variability.

TABLE 10 GSR FOR RELAXATION EXERCISE

	First minute		Last minute						
	Mean	SD	Mean	SD	t	df	p	d	r
Mean	0.21	0.58	-0.12	1.40	1.15	21.00	0.26	0.25	0.24
SD	0.17	0.13	0.24	0.27	-1.50	21.00	0.15	-0.05	0.31
Minimum	-0.09	0.57	-0.44	1.42	1.21	21.00	0.24	0.31	0.25
Maximum	0.56	0.71	0.66	1.31	-0.43	21.00	0.67	-0.09	0.09
Range	0.65	0.47	1.10	1.05	-2.47	21.00	0.02	-0.53	0.48

5.4.3 MOOD

Means and standard deviations of mood (POMS), before and after the relaxation exercise and exploration of 'Star World', were calculated, as shown in Table 10. The results for

the relaxation exercise show a decrease in mood components over time. The results of t tests, shown in Tables 11 and 12, confirmed these findings, with significant results for tension (large effect size), anger (medium effect size), vigour and fatigue (both close to large effect size). The results for the exploration of 'Star World', however, showed no apparent change in mood components over time. The results of t tests confirmed this observation. Because I am interested in imagery, as well as numerical results, I have included pictorial analysis results; while not as precise as the numerical calculations, they create their own aesthetic display, blending art and scientific practice. The results shown in the following figures become a beneficial exercise in creating inspiration for artwork, as shown in Chapter Nine. Figures 62 and 63 illustrate the bar graph produced for GSR relaxation exercise and Figure 64 the bar graph for 'Star World' exploration exercise.

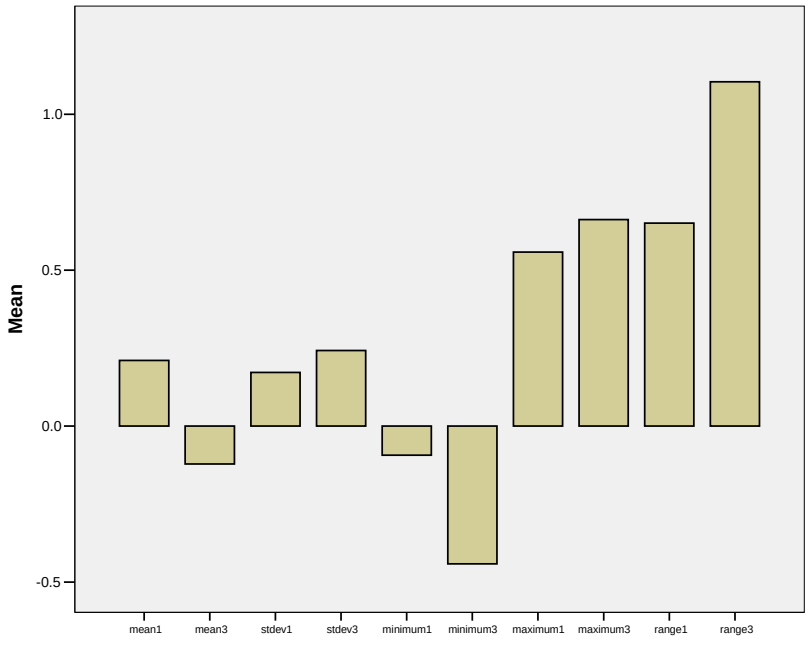


Figure 62 GSR Bar graph of relaxation exercise

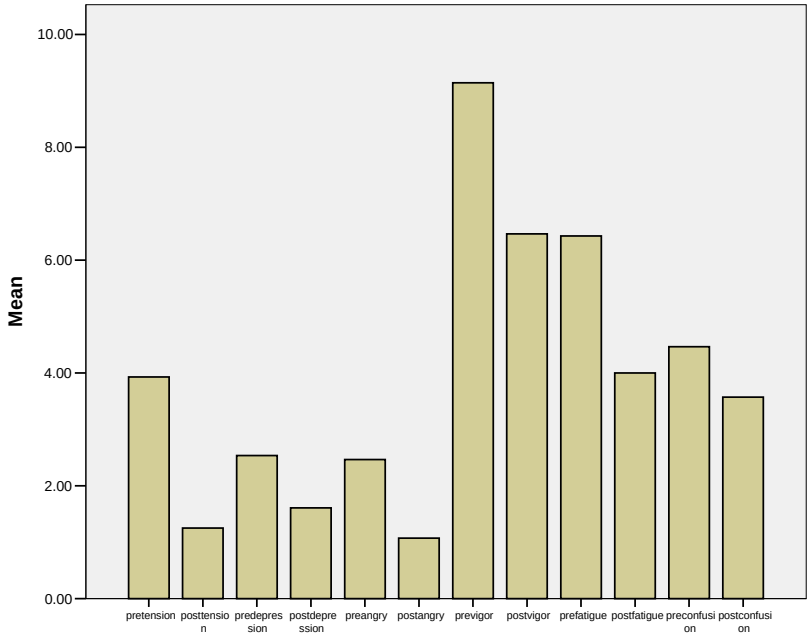


Figure 63 POMs Bar graph of relaxation exercise

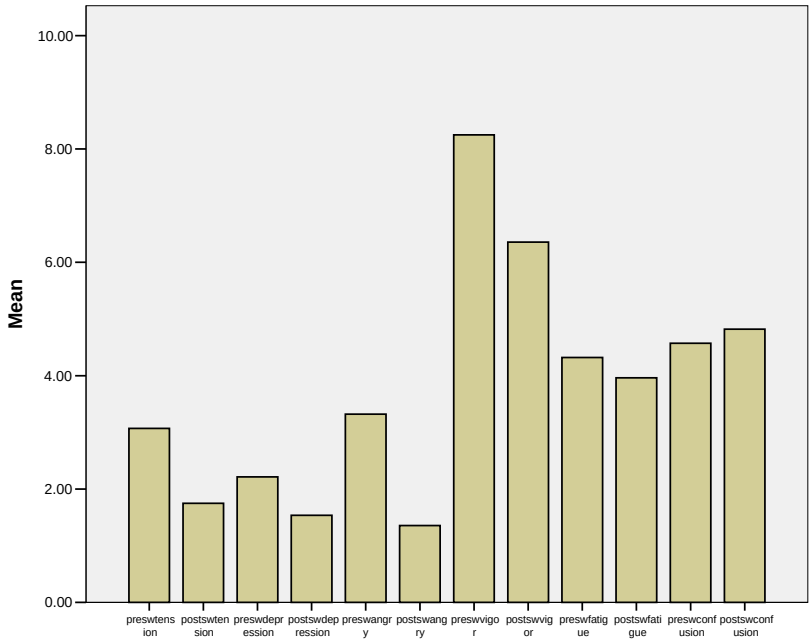


Figure 64 POMs Bar graph for exploration of 'Star World'

TABLE 11 POMS FOR RELAXATION EXERCISE

	Pre		Post						
	Mean	SD	Mean	SD	t	df	p	d	r
Tension	3.93	3.93	1.25	1.88	4.47	27	<0.001	0.84	0.65
Depression	2.54	3.84	1.61	2.96	1.44	27	0.162	0.27	0.27
Anger	2.46	3.21	1.07	2.52	2.33	27	0.028	0.44	0.41
Vigour	9.14	3.83	6.46	3.34	3.88	27	0.001	0.73	0.60
Fatigue	6.43	5.25	4.00	4.35	3.59	27	0.001	0.68	0.57
Confusion	4.46	3.11	3.57	2.13	2.13	27	0.42	0.40	0.38

TABLE 12 POMS FOR 'STAR WORLD' EXERCISE

	Pre		Post						
	Mean	SD	Mean	SD	t	df	p	d	r
Tension	3.07	3.81	1.75	2.49	1.79	27	0.085	0.34	0.32
Depression	2.21	3.73	1.54	1.82	1.03	27	0.312	0.19	0.19
Angry	3.32	8.01	1.36	2.18	1.51	27	0.143	0.28	0.28
Vigour	8.25	5.39	6.36	4.15	2.06	27	0.049	0.39	0.37
Fatigue	4.32	5.59	3.96	5.46	0.33	27	0.742	0.06	0.06
Confusion	4.57	3.3	4.82	2.65	-0.48	27	0.638	-0.09	0.09

SUMMARY CHAPTER FIVE

An experiment was devised to test participant's responses to the navigation of 'Star World', as opposed to sitting quietly, relaxing, for a few minutes in each scenario. POMS data and physiological measures were collected, both before and after the exercise, then analysed to measure participant's responses to each activity. Significance measures from the POMS questionnaire data did not show much significance, although biofeedback data did show a relaxing effect, when participants sat quietly, concentrating on their breathing, for 10 minutes. This downward trend was expected for the results of the relaxation experiment as participants relaxed when asked to sit quietly.

As it was not possible to measure biofeedback data when navigating the 'Star World' virtual environment, due to the constraints of the electrodes, teach-back data, in conjunction with the POMS questionnaire data was used to analyse participant's state of emotion, specifically relaxation. This is analysed, in-depth, in the following chapter.

CHAPTER SIX:
TEACH-BACK RESULTS

6 OVERVIEW

This chapter describes results of the analysis of teach back data, transcribed after a participant's exploration of the 'Star World' environment. Participants were very forthcoming in their verbalisation of their experience, this oral feedback was categorised and analysed, becoming a valuable method to investigate participant's interaction with the environment and how they negotiated opportunities to create narrative. This chapter is central to addressing the research question contained within this thesis, of how modern computer games can be seen to affect emotional responses from viewers and how those responses are, in turn, affected by the 'blending' of aesthetic concerns with consideration of alternative cognitive processes that induce relaxation to connect with players' or viewers' self-identity.

6.1 INTRODUCTION

Pleasing aspects did not stop the participants from perceiving and commenting on any other aspects of usability, for example, this comment made by a participant, "The controls were too responsive…It was pretty relaxing but I was stressed with controls". Teach back data was transcribed into a word processing package. An example of a comment made by one participant was, "sound was relaxing…I quite enjoyed it". Each word was placed onto a separate line then input to Microsoft's 'Excel' package, placed into alphabetical order, then categorised into themes; an example is shown in Table 13.

TABLE 13 TRANSCRIPT THEME CATEGORISATION

Transcript	Alphabetical order	Themes
Sound	Enjoyed	Emotion
Was	I	Transcript
Relaxing	it	Transcript
I	Quite	Transcript
Quite	Relaxing	Emotion
Enjoyed	Sound	Sound
It	Was	Verbs

Data, collected' teach back exercise, collected from participants, was organised into themes, as shown in Table 14. Teach back was categorised, for example, 'enjoyed' and 'relaxing,' as emotions and 'sound', as sound.

TABLE 14 THEMES FROM TEACH-BACK TASK

Themes	Number of Themes
Movement	471
Emotions	265
Environment	210
Abstract Objects	164
Verbs	117
Colours	84
Abstract Concepts	67
Sounds	61
Relaxation	24

6.2 MOVEMENT

The highest word count (471 words) related to movement. This can be related to my observation that, when observing computer-game players, game players tend to 'run' everywhere in a game, thus creating 'exploration at super speed'. Even just watching game players play, at this speed, was not relaxing at all, so I wanted the movement through the 'Star World' environment to be slow and relaxing, with no 'gamers' run' allowed, movement taking place at a gentle 'waft and flow', throughout the navigation (Csikszentmihalyi, 1996). One of the reasons reported to this researcher about why people did not play computer games, was that they thought it was hard to master the controls. It has been suggested that the learning curve for games should be gentle, with constant mental, or physical input, giving the game player something to think about by "constantly moving the goal posts further away with tantalising glimpses of rewards to come" (Hare, 2006). Navigation was easy to learn and understand when participants began to navigate 'Star World'. Movement was important for most of the participants within the environment, although participant 23 observed, "I was happy just to watch without any control and feel like an observer. It was nice to not do anything and not having to do anything…would use it [the environment] for meditating". Participant 9 observed, "I rotated 360% in the environment and when I got my bearings I moved backwards for an overview to get more idea of place and where I was in the space" and "I had an end in sight and didn't want to stop until I reached the duck or geese shapes in the sky... I went towards movement I saw in the distance and felt relaxed in an unreal world". "Movement was very good" (participant 3) and described it as "I felt unhurried at a gentle pace". Participant 9 also stated, "I flew into the sky and fell off the end of the mountains

but didn't fall to the ground". Participant 3, however, said, "Even though I was stressed with the computer controls, it was easy to understand them". The quantity of words relating to movement seems to suggest the environment was built in such a way as to be a pleasant place to move around in.

Overall, comments regarding movement through the environment were encouraging, most participants agreeing that the movement through the environment helped to create a relaxed state of mind. As Ramachandran (2003b) hypothesises, "[e]very partial glimpse has to be pleasing enough to prompt further visual search, in other words the wiring of your visual centres to your emotional centres ensures that the very act of searching for the solution is pleasing". Mysterious and partially-obscured attractors raised participant curiosity. "I wanted to see what was around the mountain" (participant 12). Making the pace of the movement through the piece slow and quiet seemed to have a positive effect upon the participants. Some participants were fearful of learning to navigate through the environment. One participant stated that he had never played a computer game before. Another female participant stated the same, but, after a few moments familiarising themselves with the controls, in the test environment, all participants navigated through the environment without any difficulty. In fact, one participant stated "The movement was one of the things I liked about this environment…I didn't feel rushed and felt I could just stay in one place and just enjoy the movement". There was no clear path through the environment, but participants found their own path, by relating to abstract objects; complex attractors were a rewarding experience. Participants became involved in their own narrative of the piece and, once prompted to begin talking about their experiences in the environment; they talked about the colours, movement through the space, objects and emotions, but not the actual size of the environment. Schubert had hypothesised that environment size would not engage participants; however, the 'Star World' environment's abstract objects enabled participants to participate in a way that they could relate to and could be useful as a guide and template, for future game design.

6.3 EMOTIONS

Participants' emotions (265 mentions recorded) ranged through both positive and negative, for example, from annoyance (7 recorded) to enjoyment (12 recorded). Participant 1 mentioned being most frustrated with the actual navigation controls, which were the mouse and cursor key controls. "I was annoyed because I didn't get

anywhere…got to get somewhere". Only two participants reported feeling frustrated with the actual environment. Both participants who mentioned this were game-players; the author hypothesises that the game-players were used to a surge in adrenalin and did not get the 'rush' and 'buzz' they connected with game playing, as the controls to navigate were set at a steady speed and could not be adjusted, therefore, they became frustrated with this lack of control. In an interesting subversion of this controlled movement, participant 9 realised that navigating more quickly through the environment was possible by using a 'snaking' movement, as discussed previously in this chapter. For this movement, the camera was panned left, while holding down the forward movement cursor key. Because the left and right camera view made the camera move more quickly, it was possible to use this motion to override the speed control, which enabled quicker movement through the environment.

6.4 ENVIRONMENT

The theme, 'environment' was mentioned 210 times. Each participant holds her/his own set of self-knowledge when viewing 'Star World'. Any change of participant changed the meanings given to the abstract objects, to a greater or lesser degree. The hexagons placed in close proximity to each other, for example, were described by participants as, 'clusters', 'space ships' and 'birds'; they were deliberately positioned in such a way as to create a relationship between them, so that the participant automatically assumed that the object had the connotations they signified to the object. Participant 1 stated, "I saw some hair or flowers…I didn't know if there was seaweed on the ground. There were cup objects I saw". Participant 9 stated "[w]hen I was asked to navigate this environment, there were pretty little paths in the valley, but nothing different to explore that I saw there". There were, in fact, no paths in the environment; the participants interpreted the texture wrapped to the landscape in their own way. Participant 3 interpreted the environment as, "[i]t seemed like I was in a Space Station, I felt like a spaceman looking down on planets or worlds. When I was navigating through the canyons, I saw different colours". I had no intention of recreating canyons; the displacement map used to create the 'floor' plane of the environment created the waves and folds and was, what is termed in art practice as, a 'happy accident'.

Semiotics reveal that substituting one signifier for another, in this way, demonstrates the use and function of the commutation test, which identifies how the signified meanings

differ, when changes are made within the same syntagmatic sequence. These objects initiate emotions and feelings, through promises of pleasure, connected to navigating the environment; "Cyberspace we are often told, is a disembodied medium" (MacLeod & Moser, 1996). We may be able to leave our bodies behind - but not our emotions.

These metaphors, displacements and condensations are seen by semioticians as the basic building blocks of sign systems, exploiting tropes to analyse how cultural conventions function, perform and persuade. Semiotics is based on a very simple, fundamental, yet general notion, of a sign that applies to anything that can have meaning for a person, either a signifier - the physical thing in the world that is perceived, or the signified - the meaning, in one's mind that one associates with the physical signifier, making a link between the real world and the world of individual minds and imaginations. The signifier can be anything that the viewer becomes aware of, in the world around us; it can be words, images, textures and structures; in the screenshot, shown in Figure 65, for example, the tubes could represent twigs, branch-shapes or pipes and tubes (Chandler, 2001).

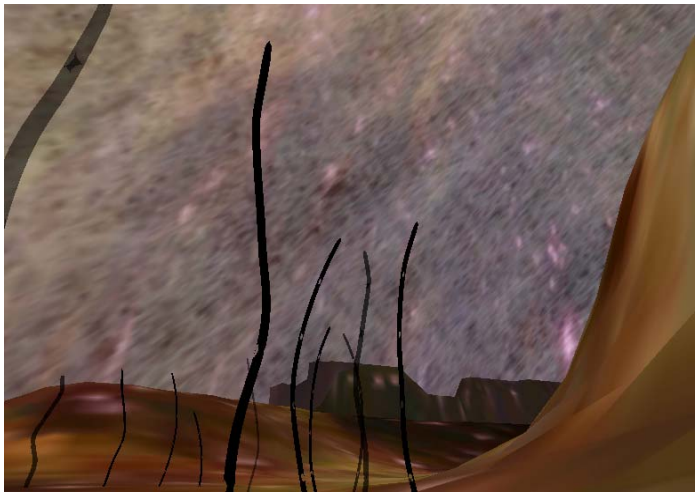


Figure 65 'Star World' Screenshot Maggie Parker © 2005

A perceptual snapshot of the signs on offer and their overall meanings suggests or connotes to the player a different relationship from what the artist desires and tries to achieve; in turn, this results in the construction of a different relationship out of the many that were possible one that may, or may not, resemble the one desired, or thought of, by the creator. Examples of this are included in the results of the varying descriptions allocated to the hexagon shapes that participants named as 'birds', 'hair' and 'flowers'. Underlying their signifiers, all images imply a 'floating chain' of signifieds, allowing the

reader to choose some and ignore others. When an image is used in a textbook or a treatise, we assume that it is there to illustrate and support the meanings and information provided by the text, however, if there is no text present (as in imagery produced by most artists), "as soon as we go beyond spatiotemporal interpretations, the meaning of visual syntax becomes fluid, indeterminate, and more subject to the viewer's interpretational predispositions" (Messaris, 1994).

6.5 ABSTRACT OBJECTS

Objects were mentioned 164 times. Participants identified in various ways the hexagon objects placed in the environment, in various ways, naming them as, variously, 'hexagons', 'birds', 'geese', 'space ships', 'fifty-pence pieces' and others. In total, the hexagons had 29 different descriptions. "Looked like a woman sitting or a statuette sitting on a seashore …more yellowy colours…I thought the birds were flying in a flock like jet rangers to blast you out of the sky but there was no interaction [laughs]" (participant 1). "I saw the goblets…I wanted to explore them" (participant 9). As stated previously, "probing the willing suspension of self-identity and the willing suspension of disbelief is leading to experimenting within the aware and the unaware, presence and immersion happenings taking place between cyberspace and the 'real-time' person inhabiting the space or operating the equipment" (Parker, et al., 2005). Participants were unaware of what the abstract shapes actually were and, as such, 'named' them. Creating a narrative with objects, bringing them into a field of expertise and knowing and naming the object, creates a power within the viewer, to believe that they can give their opinion, achieve ownership and become the temporary possessors of the object. Emotional immersion occurred when the participant-player confused the environment with real life. "Peirce regarded the connections between the signs and the referents as potentially infinite. He believed that it would always be possible to find new meanings and connotations for signs, no matter how customary the sign's usage may have become" (Stone, 2000). If every sign has a connection then the new meanings, created by participants, generated their own personal coding system, the participants 'code of ambiguity'. How a participant interprets a particular abstract object depends, largely, on its syntagmatic and paradigmatic structure. A paradigm can be defined as anything that can be used as a substitute for the present signifiers; it relates to the choice and selection of particular signs. Syntagmatic analysis relates to the sequential structure of the sign, the

combination of signs. This is another way of explaining how each participant creates their own narrative and negotiates a sign system (with the environment, 'Star World', in this case), when navigating and blending with an interactive entertainment environment - much as each viewer brings their own experiences and their self-narrative to a 2D painting, engaging, in a unique way, with the viewed piece.

One of the many interesting narratives [or codes] generated by participants was participant 3's interpretation of the abstract shapes, "I reached the duck or geese-shapes in the sky", although there were no such shapes in the environment, or any shapes intended to represent these concepts. The results of the description of abstract shapes were usually in line with a participant's interests. Participant 3 did describe her hobby as bird-watching. Another participant, who interpreted the shapes as "seaweed, shells and tadpoles", went for long walks on a beach to relax and re-assembled the abstract shapes to those objects found there, that were familiar to her. This relation to each participant's hobbies is significant, not in a scientific, logical, measurable method, but in identifying, engaging and transforming abstract shapes into something that each participant could rationalise, to create a personal, emotional, self-blend and connection. Activities that the participant uses to relax could be interpreted into a virtual environment. These codes of interaction were signifying and quantifying the unknown into the known. First, the reader must have knowledge of the world and society; second, she or he must understand the relevance of the medium and the genre, third, she or he must be able to relate the two together. This relates to the naming of the objects, in the 'Star World' environment, by the participants. Each named objects in a way that identified them in their own personal history, relating to their own experiences, for example, "I thought the birds were flying in a flock like jet rangers", by participant 1. Signs, however, will often have connotations or meanings that come from within our own culture and society. Sometimes, these can be recognised, consciously, but at other times are only apparent when we look for them. Artists are constantly noticing and engaging with these connotations; cracking these cultural codes becomes a part of art practice. Because the artist made abstract pieces that became attractors, participants had the space to project their own personal schema on these abstract pieces, interpreting the imagery in a personal way, allowing engagement with a virtual environment, in a previously-unexplored way.

6.6 COLOURS

The colours used in the environment were mentioned 84 times. Participant 9 stated; "I felt it was an unreal world due to the colours" and "wanted to explore purple and blue colours". Participant 3 said, "I loved the colours...they were brilliant colours in various colour ways…the colours remain in my mind". Participant 12 mentioned that they "didn't like dark purple as landscape". Participant 15 "liked the purple…liked to stay in the purple", whereas participant 20 thought that the blue was "easy on the eye…purple was dark". I had expected the colours to be more important and be mentioned a lot more times. Some comments about colour had a cultural bias, as participants not born in England have different connections and connotations to colour. Colour has different meaning in different countries, a fact that is often forgotten by people, for example, the colour black, in China, many years ago, was reserved only for the Emperors' use and signified royalty, whereas, here in Britain, it has come to signify death and mourning to many people.

6.7 ABSTRACT CONCEPTS

The theme of abstraction occurred 67 times. Included in this theme were words, such as, "abstract" and "alien". Participant 24 talked about "surreal world…illogical…world was initially odd…was weird". Participant 18 noted; "Sky had an effect after a while combination of ground and sky too much information at once". Other participants mentioned that the world seemed, "something somewhere strange…surreal…unreal". Participant 26 reported, "A strange environment…conducive to relaxing". The abstract quality of this environment, overall, seemed to be accepted by the participants after, initially, having to deal with the imagery, with participant 26 reporting that it was a "Stress-free environment with a daydream quality".

6.8 SOUNDS

The sound heard when navigating the environment, mentioned 61 times, was the global sound of wind playing over Welsh mountainsides and included some birdsong (BBC Sound Disc, 2003). None of the participants mentioned hearing this birdsong, participant 3 mentioned the sound; "I enjoyed the sound…there could be different sounds". Participant 15 stated; "the sound was distracting and I wanted to turn it off". The experience of participant 18 was that the "[s]ound was distracting and stressful in the

environment…it sounded like waves washing ashore…like white noise fuzz". Most of the participants 'tuned out' the sound and did not notice it once they began navigating the environment. "The sound was not intrusive…it was in the background…I didn't really hear it" (participant 9).

6.9 RELAXATION

Relaxation was mentioned 24 times by 23 participants. Three participants thought that the animation of the hexagons and the animation of the inside sphere was relaxing, 8 participants thought that sound added to the notion of relaxation. Participant 5 thought that "the sound of the sea" helped to relax them. Nine participants thought that movement was relaxing. Participant 1 thought that the experience was "pretty…and relaxing", whereas participant 2 said they enjoyed "just sitting here watching…very relaxing". They also thought that the colours were relaxing; "colours...calming sound…relaxing…quite enjoyed it" and also observed that "just sitting here watching…very relaxing". Participant 9 said "I was uneasy with the floating goblets, why are they floating in the sky - but I didn't feel threatened at all and now I feel relaxed". Two participants did not think they were relaxed. Participant 19 said; "Don't feel relaxed but was not relaxed before". Participant 21 said; "gloomy depressing colours made me tired, not relaxing".

6.10 INDIVIDUAL PARTICIPANT'S EXPERIENCE

After their data had been observed, transcribed and analysed, four participants (numbers 4, 5, 11, and 28) were selected for further data analysis using all their collected data from the two exercises. These data were collated and are illustrated in Tables 16, 18, 20 and 22, 'Participant Responses'. It was determined that data analyses of participants 4 and 11 gave negative responses to their experience of navigating 'Star World'. Examples of selected comments from the transcript are included in Tables 16 and 20. Participants 5 and 28, offered positive responses, in teach back exercise transcripts and are included in Tables 18 and 22. In the following analyses, z scores are used for POMS data and GSR data to aid the interpretation of the data, (by definition, they have a mean of 0 and a standard deviation of 1). Figures 66, 67, 68, and 69, show graph readings of physiological exercises, the recording of GSR measurements (third row line in each table) used in the following analyses.

6.10.1 PARTICIPANT 4

Participant 4 was female, was aged 55 and was a non-computer-game player. She was classified as having a negative response as shown in Table 15. In the relaxation exercise, the participant's physiological responses were recorded by physiological measurement data, as shown in Figure 66, the graph showing a downward trend indicating increased relaxation over time. In response to questions asked after the relaxation experiment, shown in Chapter Five, Table 9 the participant noted that she could hear a telephone ringing a few seconds after beginning to relax, which originally, was distracting; "I feel I have to respond to a telephone call within a few rings", but after that she thought she had felt relaxed. This participant appears to score somewhat higher (>1 SD higher) on fatigue both before and after the exploration exercise, than the rest of the sample. The recorded POMS data showed that the participant fatigue score was higher after exploring the environment, which was reflected in teach-back comments. Emotions were recorded as "[b]oring and pointless" and she "[w]anted an objective". Colour was described as "[d]ark and sombre", but other participants described the colours as "[l]ight, rainbow colours" and "[m]other of pearl". The participant was "[f]rustrated with the controls", wanting to navigate faster than she actually could. As mentioned previously, the controls are set to deliberately decrease participants' navigation speed. The participant "wished there was more time to relax" and noted that she should "[r]emember to make time". When navigating 'Star World', the participant was intrigued by the environment and described the abstract objects, as "tadpoles", "dead trees", with "valleys and mountains". One observation was that the participant commented she "[f]elt restricted", when navigating the space, although she had previously described that the environment; "has a similar distance as 'Google Earth'". This is software that enables people to navigate a 'real earth', constructed from satellite photographs and available for download. The participant indicated that she believed the environment was, initially, a small space, but discovered that she could 'fly' in the world-space. Although the participant had the option of 'flying' through the space, she chose to 'walk' along the 'floor'.

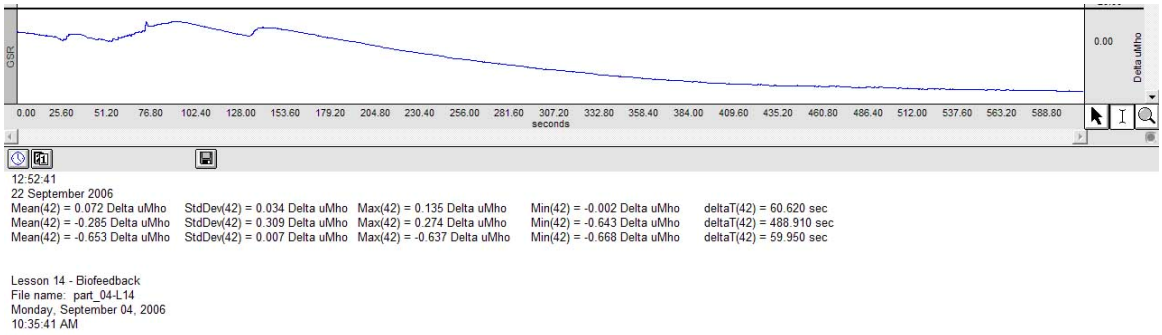


Figure 66 GSR Measurement Participant 4

TABLE 15 PARTICIPANT 04: RESPONSE TO 'STAR WORLD' AND RELAXATION EXERCISE

Star World										
Negative										
Teach back	Movement	Emotions	Environment	Objects	Colour	Concept	Sounds			
	Controls Ok Couldn't Go Fast Frustrated No Fine Control When Speeding Up	Boring And Pointless Wanted An Objective Frustrated	Landscape Valleys mountains Angular Flat No Depth Grid	Tadpoles Dead Trees Bits Of Aeroplanes	Black Lines White Lines Like Structure Ready To Be Built Ground Dark Sombre Not Bright	Reminded Me Of Google Earth Distance Then Zoom In Ground Level Reminded Me Of Plastercine	No Sound			
POMS *pre*	tension	depression	angry	vigor	fatigue	confusion				
Z Range pre	-0.81	-0.59	-0.41	-0.60	1.19	-0.17				
POMS *post*	tension	depression	angry	vigor	fatigue	confusion				
Z Range post	-0.70	-0.85	-0.62	-1.05	1.84	1.57				
Relaxation										
POMS *pre*	tension	depression	angry	vigor	fatigue	confusion				
Z Range pre	-0.74	-0.66	-0.77	1.01	-0.65	-0.79				
POMS *post*	tension	depression	angry	vigor	fatigue	confusion				
Z Range post	-0.67	-0.54	-0.42	0.16	-0.69	-0.74				
GSR	zmean(first)	ZSD(first)	zRange(first)	zMin(first)	zMax(first)	zmean(last)	SD(last)	zRange(last)	zMin(last)	zMax(last)
	-0.24	-1.03	-1.10	0.16	-0.60	-0.38	-0.88	-1.02	-0.16	-0.99

6.10.2 PARTICIPANT 5

Participant 5 was 44 years old and played casual computer games, for example, 'Solitaire'. She was classified as having a positive response to the relaxation exercise, as shown in Table 16. Participant 5's results from the relaxation exercise, shown in Table 16, were extreme, in terms of very high post-relaxation z-scores; 3.51 for depression and 4.33 for anger, when compared to the rest of the sample. This extreme response was not as high in the exploration exercise, with z-scores of -0.85 for depression and -0.62 for anger. Physiological data recorded several increases in tension towards the latter few seconds of the relaxation exercise, as shown in Figure 67. This result coincides with POMS anger z-scores. When questioned, the participant mentioned that she was "really enjoying the peace and quiet until noises of trolleys moving around disturbed me". The participant felt that the exploration exercise was more beneficial, as teach-back data, presented in Table 16, illustrate. She was "[s]urprised when stopped; could have gone on for hours". The participant also commented that it was "[e]asy to navigate" and emotional responses included, "[l]oved the iridescent colours" and "felt relaxed". This participant responded more positively to exploring an environment. Abstract objects were identified as shells, cups and waterfalls and the "[s]ound reminded me of the sea". This participant regularly engaged in yoga for relaxation purposes and it is hypothesised that the alternative interactivity of navigating an environment produced a positive result, in a dissimilar system to participating in yoga exercises.

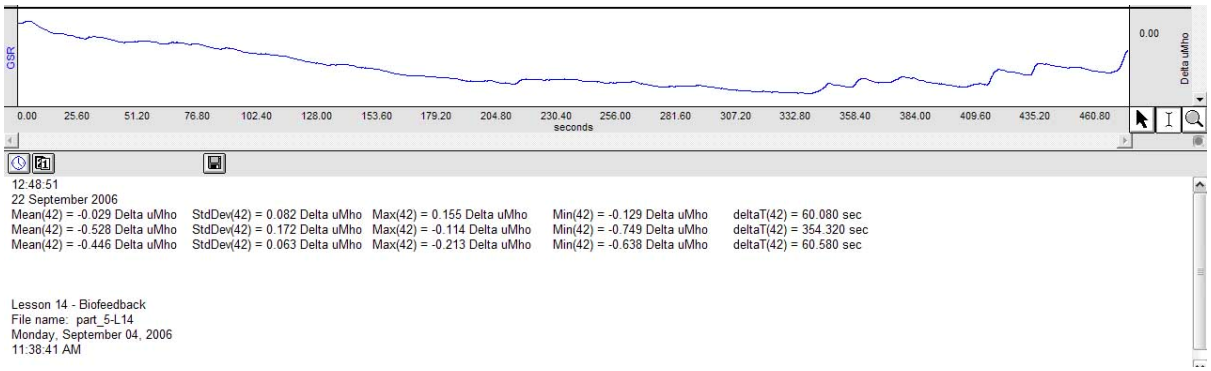


Figure 67 GSR Measurement Participant 5

TABLE 16 PARTICIPANT 05: RESPONSE TO 'STAR WORLD' AND RELAXATION EXERCISE

Star World											
Positive											
Teach Back	Movement	Emotions	Environment	Objects	Colour	Concept	Sounds				
	Easy To	Wanted To	Sky	Shell	Light	Logical	Sound				
	Navigate	Switch Thoughts	No Pattern	Waterfall	Rainbow	Not	Reminded				
	Wandered	Off Ready To	At All	Found	Colours	Fantasy	Me Of				
	Round	Finish Felt		Shell	Very Blue		Sea Shell				
		Relaxed Quite		Cups	Found Total		Like				
		Relaxing		Scattered	White		Noise				
		Surprised When			Mother Of		Sound				
		Stopped Could			Pearl Loved		Enjoyed				
		Spend Hours			Colours		Straight				
					Iridescent		Forward				
POMS before	tension	depression	angry	vigor	fatigue	confusion					
Z Range pre	-0.54	-0.59	-0.41	-0.97	-0.77	-0.78					
POMS after	tension	depression	angry	vigor	fatigue	confusion					
Z Range post	-0.70	-0.85	-0.62	-1.53	-0.73	-0.31					
Relaxation											
POMS before	tension	depression	angry	vigor	fatigue	confusion					
Z Range pre	-0.24	-0.66	0.17	-1.61	0.87	-0.79					
POMS after	tension	depression	angry	vigor	fatigue	confusion					
Z Range post	0.93	3.51	4.33	-0.14	0.23	0.20					
GSR	zmean(first)	ZSD(first)	zRange(first)	zMin(first)	zMax(first)	zmean(last)	ZSD(last)	zRange(last)	zMin(last)	zMax(last)	
	-0.41	-0.67	-0.79	-0.06	-0.57	-0.23	-0.67	-0.65	-0.14	-0.67	

6.10.3 PARTICIPANT 11

Participant 11 was female, aged 46. Her responses to the relaxation exercise were classified as negative. In the relaxation exercise she observed that she "[c]ounted the beads on the blinds" and wanted to be relaxing in "an environment away from work". She also observed that she could not get out of her "work mode" and "remained conscious of outside sounds". Physiological measures, shown in Figure 68, display that the pattern of relaxation was slightly erratic, the graph curves down at first, then there are 2 curves showing that the participant started to relax, but was disturbed. In response to Question 4 she did not close her eyes at all and Question 6 showed that she was relatively conscious of sounds, as shown in Chapter Five, Table 9. As shown in Table 17, the post-relaxation vigour was somewhat high, compared to the rest of the sample (z = 0.16) and post-relaxation confusion was extremely high (z = 3.48). Z-scores for the exploration exercise showed tension (z = 2.51), and depression (z = 1.36) were increased and confusion remained relatively high (z = 2.55 before and z = 2.71 after relaxation). When exploring the environment, she "didn't feel in control" and "wanted to know what I was doing". She hated the textures used in the piece; "[h]ate stretched textures" and wanted more control over the sound. She disliked the colours used in the environment and found it hard to relax for either of the exercises. The participant had extremely negative responses after the exploration and navigation exercise and also had a somewhat higher depression score after the exploration exercise. Her negative response could be due to her art skills, which may explain a negative aesthetic reading of the environment. She seemed to obtain a slight benefit from navigating the environment, however, she "felt reasonably relaxed and remembered taking a deep breath at one point".

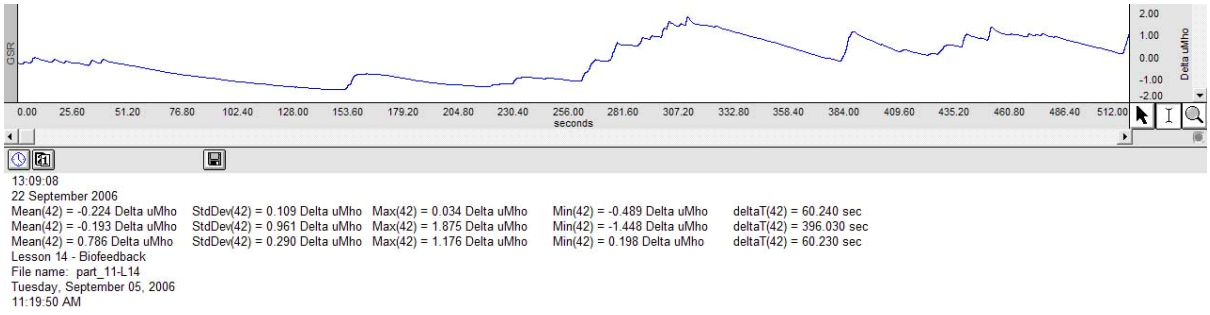


Figure 68 GSR Measurement Participant 11

TABLE 17 PARTICIPANT 11: RESPONSE TO 'STAR WORLD' AND RELAXATION EXERCISE

Star World											
Negative											
Teach back	Movement	Emotions	Environment	Objects	Colour	Concept	Sounds				
	Searching For Something Navigation Bit Slow No Animation	Didn't Enjoy Wandering Aimlessly Felt Reasonably Relaxed Deep Breath At One Point	Hate Stretched Textures Didn't Like Textures	Pixelated Objects On Screen Bees	Colours Garish Disliked Colours Blue Watery Part		Sound More Control Over Sound				
POMS pre	tension	depression	angry	vigor	fatigue	confusion					
Z Range pre	-0.28	-0.59	0.21	0.51	0.30	2.55					
POMS post	tension	depression	angry	vigor	fatigue	confusion					
Z Range post	2.51	1.36	0.29	0.16	0.56	2.71					
Relaxation											
POMS pre	tension	depression	angry	vigor	fatigue	confusion					
Z Range pre	0.78	-0.40	1.41	-0.30	-0.27	2.10					
POMS post	tension	depression	angry	vigor	fatigue	confusion					
Z Range post	-0.13	-0.54	-0.42	1.06	-0.23	3.48					
GSR	zmean(first)	ZSD(first)	zRange(first)	zMin(first)	zMax(first)	zmean(last)	ZSD(last)	zRange(last)	zMin(last)	zMax(last)	
	-0.75	-0.47	-0.27	-0.70	-0.74	0.65	0.18	-0.12	0.45	0.39	

6.10.4 PARTICIPANT 28

Participant 28 was a 30-year-old female, who had reported overall positive responses to both relaxation and exploration exercises. After the relaxation exercise, tension was higher than the rest of the sample ($z = 2.53$). Post-relaxation for depression was also relatively high ($z = 1.82$), but not as high as before the exercise ($z = 3.50$). Fatigue and confusion were relatively high, both before and after the exercise ($2 < z < 3$). After the relaxation exercise, as shown in Chapter Five, Table 9, questions showed that the participant had felt relaxed to a point, but it was difficult for her to relax deeply. Physiological measures showed peaks and troughs all the way through the relax exercise, as shown in Figure 69. The participant mentioned that she was taking medication for manic depression and GSR data were examined to see if this was a normal graph for a person who has this diagnosis. Participant 28's extremely high depression before the exploration exercise ($z = 2.09$) was reduced afterwards ($z = 0.26$), as shown in Table 18. Teach back data were investigated to discover why the result was extreme. Teach back revealed that she would have "liked to stay a little bit longer". She wandered around, explored the environment and the animation was "just right". She discovered lots of objects "found lots of things…cups, birds, sticks" and interpreted the sound as, "very nice…rustley leaves and water". The size of the environment was described as. "[b]ig enough space to wander around". This particular participant had a history of depression and these exercises show that navigating a non-threatening environment could help in relieving depression. Extremely high levels of tension and depression were reduced to relatively high after the two exercises. The changes in depression were consistent throughout the two exercises. Navigating the environment allowed self-blending to take place in a secure, non-threatening space, and helped to lower depression.

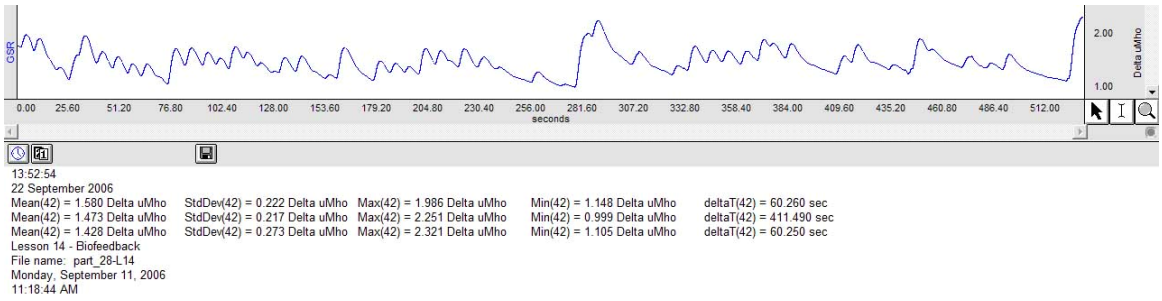


Figure 69 GSR Measurement Participant 28

TABLE 18 PARTICIPANT 28: RESPONSE TO 'STAR WORLD' AND RELAXATION EXERCISE

Star World										
Positive										
Teach Back	Movement	Emotions	Environment	Objects	Colour	Concept	Sounds			
	Wandered Around And Explored Animation Was Just The Right Speed Space To Wander Around Controls Easy To Use Right And Left Too sharp	Liked To Stay A Little Bit Longer	Size Is Big Enough Space To Wander Around	Found Lots Of Things Cups Birds Sticks	Colours Liked		Sound Very Nice Rustly Leaves And Water			
POMS pre	tension	depression	angry	vigor	fatigue	confusion				
Z Range pre	-0.54	2.09	-0.41	-0.97	0.48	0.43				
POMS post	tension	depression	angry	vigor	fatigue	confusion				
Z Range post	-0.70	0.26	0.29	-0.33	0.01	0.44				
Relaxation										
POMS pre	tension	depression	angry	vigor	fatigue	confusion				
Z Range pre	1.29	3.50	-0.46	-1.61	2.20	2.75				
POMS post	tension	depression	angry	vigor	fatigue	confusion				
Z Range post	2.53	1.82	-0.03	-1.34	2.53	2.08				
GSR	zmean(first)	ZSD(first)	zRange(first)	zMin(first)	zMax(first)	zmean(last)	ZSD(last)	zRange(last)	zMin(last)	zMax(last)
	2.36	0.37	0.40	2.18	2.01	1.10	0.11	0.11	1.09	1.27

6.11 CONCLUSIONS

As an investigation into the research question posited by this thesis, the reported results it is argued, can, clearly, be seen to affect emotional responses from viewers. These responses, were, in turn, affected by the 'blending' of aesthetic concerns, with consideration of alternative cognitive processes that induce relaxation, to connect with players' or viewers' self-identity. A rewarding experience from the results and also from speaking to the participants after both exercises was that participants reported how much they enjoyed their little time of peace and quiet and how much they would enjoy doing this type of activity each day. Participants reported that finding time to do this would give them space to think, reflect, catch up and collect their thoughts, to prepare themselves for the rest of their busy day. An empirical study, by Riva, et al., (2007), hypothesised the possibilities of inducing specific emotions in users, including anxiety and relaxation. The study of participant data reveals that, to some extent, the data collected in the relaxation and exploration exercises produced for this thesis supports those results. POMs data measures of mood-states, in addition to physiological measurements, generated a more inclusive data set for the relaxation experiment. Physiological measurement was not conducted for the exploration exercise because, after pilot testing, it was determined that if participants had been wired to the biofeedback equipment via the connection (either right-hand or left-hand), the attachments to the fingers were in an awkward position. This made manipulation of the mouse difficult, thus affecting the control of navigation and camera movements. Teach back exercise, however, was an invaluable source of data and produced very useful results. Riva et al's results suggest that presence is influenced not only by the environment's graphic realism and the environments used in the study re-creating real world textures and objects, but also by the emotional responses from participants. Participants in the exploration experiment experienced objects in 'Star World' as recognisable, real-world objects. Abstract shapes were included in 'Star World' and these visual clues became maps on which participants mapped their own self-identity and narrative, which allowed participants to blend with an abstract, illogical world. As discussed by Lakoff & Johnson (1980 & 1987), these abstract objects required participants to engage and apply their personal image schemata, causing them to make connections to - or blendings with - what they were viewing. This interaction took place in and throughout the time of navigation

of ‘Star World’. As participants navigated the environment, they created “multi-modal patterns of experience, not simply visual”. If, as he argues, “all our symbolic expression and interaction are tied intimately to our embodiment and to the pervasive aesthetic characteristics of all experience”, then, I argue, ‘Star World’ tapped into that multi-modal experience. The experience of one participant, for example, “I reached the duck or geese shapes in the sky”, when her hobby was bird watching, seems to support Johnson's (1999) argument that “aesthetic aspects of experience structure every dimension of our experience and understanding”. It is worth re-visiting the research question raised at the beginning of this thesis in the summary, to remind the reader how this question relates to the answers obtained from the empirical investigation contained in this chapter.

SUMMARY CHAPTER SIX

6.12 RESEARCH QUESTION

How can aspects of modern computer games affect emotional responses from players? Could these responses be affected by blending aesthetic concerns that create alternative cognitive processes to induce alternative mood-states, particularly relaxation?

The primary research question investigated in this thesis indicate POMS measures of vigour, fatigue and tension did reduce as a result of the relaxation exercise, but did not change as a result of the exploration exercise. It was hypothesised that participants would be relaxed after the relaxation exercise, but it was not known what would happen after the navigation exercise. Results of related t tests revealed no statistical significance for the exploration of 'Star World' in participant's mood-states. It should be noted that although the sample size was relatively small (28 participants), power was very high (0.98) to detect a large effect size (d = 0.80). It was hypothesised that navigating an environment where there was no threat would create perceptual opportunities, which would cross the 'strange space' and engage participants' personal and unique self and self-identity structure, creating opportunities of alternative interactions. This was revealed in teach back results of the exploration exercise. Overall, participants enjoyed the alternative method of interaction with a computer game, offered by 'Star World' and were surprised that they did not have to fight any enemies, or solve any puzzles. When confronted with abstract shapes and forms, they negotiated personal mental models, to explain what they were seeing, without prompting by anything other than navigating the environment and were mostly surprised when the researcher entered the room, when the time was up. Results from the analysis of teach-back protocols contrasted with results of the POMS inventory, which did not reveal any significant differences over time, however, in their teach back protocols, participants reported that they had felt relaxed, having enjoyed the experience of creating their own personal narratives and personal scenarios. They informed this researcher, that it was a good idea to have a period of relaxation in every working day and asked when it could be implemented. These comments have recently been supported in a report by RealNetworks™ (2008), which reported that game-players enjoyed watching advertisements that were 'cut' into games, as it gave the players a chance to have a break. The finding that this has an effect, when exploring an environment, suggests that periods of calm could be inserted into high-activity and other

game genres, which could produce a more intimate, immersive experience of the game. Empirical research is important to the field of game studies and also computer-game companies, to ensure participation and to encourage the development of alternative opportunities to engage with the game-playing and non-game-playing public community. The artistic methods used to create the 'Star World' environment used space and ambiguous objects as a strategy to help players relax and be present in the moment. Ambiguity produced aesthetic responses from participants; it allowed them to 'wander' and not have to think of anything, except making connections with the environment, their self and their self-identities. This strategy, I argue, could be incorporated into future game design, making games a multi-functional tool. As well as being a 'beat-em-up' challenge, games could have moments of calm and peace, in areas designated as such.

CHAPTER SEVEN:
ABSTRACT ART AND ALTERNATIVE GAME DESIGN

7 OVERVIEW

Haute games create alternative opportunities for using abstract shapes. These opportunities are investigated and the importance of learning from these alternative methods is discussed. Abstract shapes affect our viewing of pieces of work, including game environments, so how do artists create abstract shapes in a game environment design? Why do computer-game companies continue to represent the 'real world' in virtual-world environments? Alternative artist-produced games and examples of artists 'modding' (Wikipedia, 2003) game environments are examined. In this chapter, it is argued that these influences are important to describe due to the inter-interdisciplinary perspective of this thesis.

7.1 INTRODUCTION: ABSTRACT ART AND ARTISTS

When games were first created, abstract shapes and forms, for example, a pixel square for a ball in the game of 'Pong', were used to represent a tennis court, racquet and ball, but everyone who played the game knew it was meant to be a ball in a game of tennis, and did not notice it was a square-shaped ball. The hardware and software, at the time, were unable to represent a ball shape; however, the connections between the rules of tennis became strong enough to overcome the constraints of the software limitations. When creating abstract shapes, how do these shapes affect a player's interaction with the game environment? How do these abstract shapes interact and blend with a player's self-identity? How did participants come to name the objects and environment, when there was nothing that was taken from real-world perception?

In the very early 20th century, art movements such as Cubism and Futurism, depicted real forms in a simplified, or rather reduced way, keeping only an allusion of the original natural subject. Such paintings were often claimed to capture something of the depicted objects' "immutable intrinsic qualities rather than its external appearance" (Heath, 1957). When Kandinsky worked for months creating studies for the work, 'Composition IV', he became exhausted while working on a painting and went for a walk. In the meantime, Gabrielle Munter tidied his studio and, inadvertently, turned his canvas on its side. Upon returning and seeing the canvas, yet not identifying it, Kandinsky fell to his knees and wept, saying that it was the most beautiful painting he had seen. He had been liberated from attachment to the object, as shown in Figure 70. I argue that game designers need to

take this leap of liberation. Haute games can create something not seen before, which can push the boundaries of the medium; for example, there was no need to have gravity and real physics in 'Star World', participants could fly and navigate through 'space'.

Figure 70 'Composition IV' Vasily Kandinsky 1911

Why did Kandinsky's paintings have such an effect on the people who viewed his paintings? What influence does abstraction have on our perception of our self-identity? In a similar method, the mathematician, Littlewood (1986), in his 'Miscellany', determined that immersion was the most important factor in creative invention. In his findings, creative minds need to spend a long time thinking hard, working on and rejecting permutations and combinations, often getting nowhere, before they start to be regularly blessed with winning hands. Immersing himself into his painting for months, then finally discovering a new permutation allowed Kandinsky an alternative viewing of the created object, "allowing the free flow of a creative idea, the inner experience of the painter who has passed years creating abstract paintings of an incredible sensorial richness, working on forms and with colours, observing for a long time and tirelessly his own paintings and those of other artists, noting simply their subjective and pathetic effect on the very high sensibility to colours of his artist and poet soul" (Clement, et al., 1994).

7.2 ABSTRACT PATTERNS AND THEIR USEFULNESS

Ramachandran (2003c) believes that much of perception has to do with segmenting the world into objects (patterning), before you proceed to ask, what is it? "Evolutionarily, it is an extremely important aspect of perception, in fact that's what most of perception is about. Once you develop this ability to engage in cross-modal abstraction, that structure in turn became an expatiation for other types of abstraction that us [sic] humans excel in, be it metaphor or any other type of abstraction".

The computer game 'Inventive Quotient', an advertisement of which is shown in Figure 71, devised in 1982 by William Maxwell, used nine abstract symbols as a strategy to raise the IQ of children. The original real-world game was translated to the virtual world. He argues that the use of abstract symbols raises the intelligence quotient of children and seems to have the greatest effect on six-year-old children, assuming that the child is in an emotionally healthy environment (Maxwell, 1982).

Figure 71 'Inventive Quotient' Game Advertisement

7.3 ABSTRACT PATTERNS AND IMMERSION

If immersion is a factor in creative invention, then what factors can include a game player in an immersive experience? Computer games, by their way of production (virtual spaces engaging the game player) create virtual spaces in which the self can be stimulated to engage even more with the software, inducing a loss of self-identity. "Stimulation of right parietal cortex induces floating near the ceiling - out of the body experience - one of the axioms of your self is abandoned" (Ramachandran, 2003d). This out-of-body sensation was experienced by me, a few years ago when I was in hospital at the age of 24, and was told that I had 'died', when being operated on. I floated above 'me' and 'saw' everything around 'me'. Later, I described who was there in the operating theatre, including what position they were standing in and what they were doing. I had a sensation of floating, then rushing down a tunnel of silver, shimmering vaporous light, intense, but not glaring, my body becoming a floating spirit of lightness, surrounded and suffused with glowing, perfect warm, gentle love. I was then pulled back in the reverse

direction, drifting at first, then rushing, at great speed, down another tunnel of light, to become aware of body-self once more. Because of this disembodiment, I could have lost touch with one of the attributes of self as defined by the attribute of embodiment, which may be the stimulation of the right parietal cortex interrupting this axiom of embodiment.

The first memory of my own self-identity as a person came when as a child of 14 months old, I remember playing outside and a small boy copied my actions. This interaction brought about a realization that other beings could imitate actions and, in becoming sentient, validated my own self-ness and existence. Ramachandran (2003c) explains, "[o]ur brains are essentially model-making machines. We need to construct useful, virtual-reality simulations of the world that we can act on. Within the simulation, we need also to construct models of other people's minds because we're intensely social creatures, us primates. We need to do this so we can predict their behaviour". If self-identity is constructed from a series of abstract shapes, how does this mechanism operate within a computer-game environment? Ramachandran argues that mirror neurons are responsible for these actions, for which there is now evidence. These mirror neurons fire when observing other people's actions, creating an internal 'virtual-reality' simulation. Participants observed the abstract objects and environments in 'Star World'; these objects fired up participants' mirror neurons; they, in turn, created a 'virtual-reality-mirror' to explain what participants were seeing. Artists are aware of abstract shapes because of the methodology employed in art training and are continually creating virtual digital models, (VDMs) incorporating shapes into artwork produced. Highly-trained artists are aware of these shapes, or building blocks and abstractions and are more often in a position to create and model these VDMs. In a software package such as 3D Studio Max, the basic building blocks to start creating a figure are a sphere and a cube, abstract shapes which can then be manipulated to create forms. These same forms are used as a conventional system taught to artists, used as a basis to draw and create imagery on paper and other materials. The first software packages able to create graphic shapes dictated what those shapes could be, for example, the square pixel ball and the circle shape, in 'Pac-Man' and 'Pong', much as current 3D graphic packages allow the construction of these primitive shapes, as shown in Figure 72.

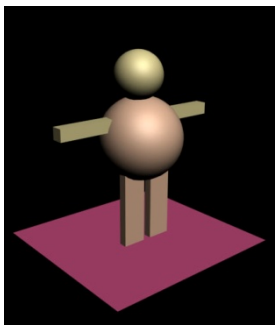


Figure 72 Constructed body shape

Advances in graphic software, however, enable more complicated shapes to be composed. An example of abstract shapes, used to construct a body, is shown in Figure 73, simple shapes becoming a representational human figure. These basic shapes are then manipulated to create architectural forms. These simple shapes, squares, circles, and triangles have been used to construct real-world drawings, created by artists over the centuries and the virtual representation of 'Indian World', seen in Figure 74.

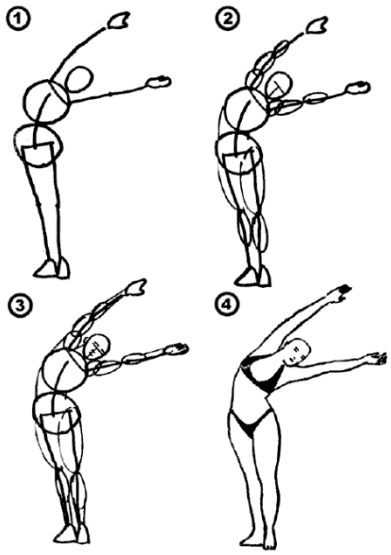


Figure 73 Figure construction

Figure 74 'Indian World' Screenshot Maggie Parker © 2006

Game artists and designers are continuing to use these methods of production. This is like cryptographers trying to crack a code, reducing complicated structures to basic elements to reconstruct the real world in another format. These underlying semiotic structures become a basic 'code', investigating game-code and, beginning to 'crack' underlying semiotic structures, we find elements, as shown in Figure 75.

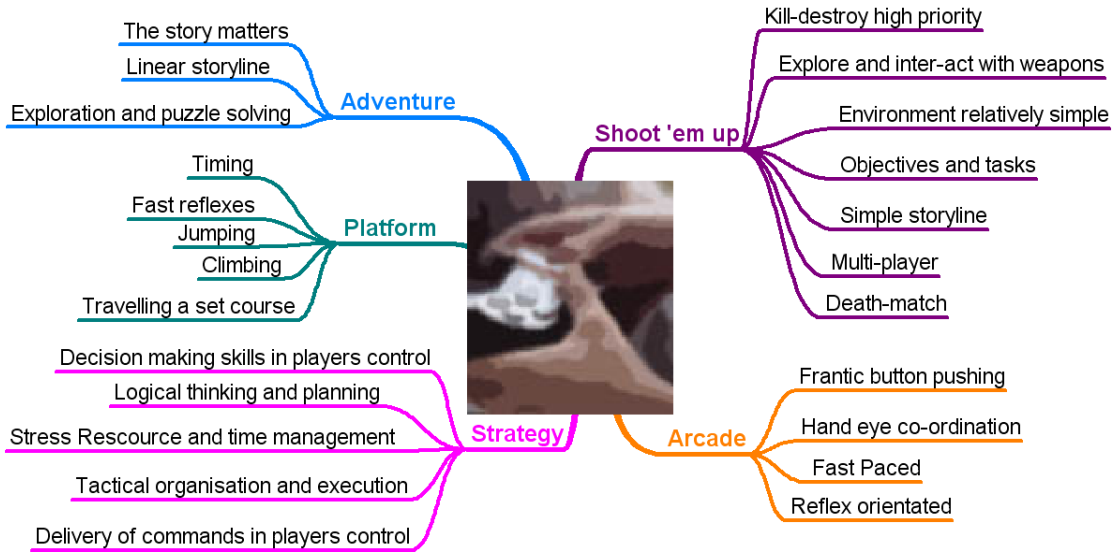


Figure 75 Underlying Semiotic Structures

Some of these codes contribute to the experience of playing the game, frantic button pushing and hand-eye co-ordination, while travelling a set course and solving a puzzle. All are elements to be considered in the game play. Other parts of game-playing structures are shown in Table 19 and Table 20, which begin breaking down the elements of game-play in much the same way as creating a body representation made from spheres and squares. These tables illustrate what keywords and lifespan elements comprise a

'shoot-em-up' game, to confer on it that genre description; for example, frantic, colour and gore.

TABLE 19 KEYWORDS FOR SHOOT 'EM UP GAMES FROM THE PERIODIC TABLE: COURTESY OF DR P.C. FENCOTT

Game play Elements	Graphical Elements	Excitement Elements
Controls	Animation	Speed
Multiplayer	Background	Physical Contact
Engine	Dimensions	Weapons
Response	Gouraud Shading	Gore
Addictive	Polygons	
Relentless	Rendering	
Frantic	Texture Mapping	
Hidden Secrets	Colour	

TABLE 20 LIFESPAN ELEMENTS COURTESY OF DR P.C. FENCOTT

Lifespan Elements	Realism Elements	Peripheral Elements
Levels	Intuitiveness	Music
Learning Curve	Artificial Intelligence	Plot
Opponents	Light Effects	FMV Intro
Scenarios	Sound Effects	Characters
Options	Special Effects	Originality
Modes	Simulation	Licenses
	Motion Capture	Sequel
	Real Life	Conversions

7.4 HOW DO WE DISSECT THESE CODES?

So far, thirty areas of the brain have been mapped which 'fire up' when we view imagery, so if there are that many areas of seeing, then how many parts of the brain 'fire', to create our notion of self? If one can pick 6 numbers in the lottery that produces 1 chance in 14 million of having a winning combination, then how many combinations of self can there be? The answer is unimaginable; combinations of many trillions of neuron combinations, firing to create image models of what we are viewing in the real world, which are then interpreted to form some sort of connection with our selves. Shown in Figure 76 are images of the Human Brain Mapping project (Szentágothai, 1912-1994).

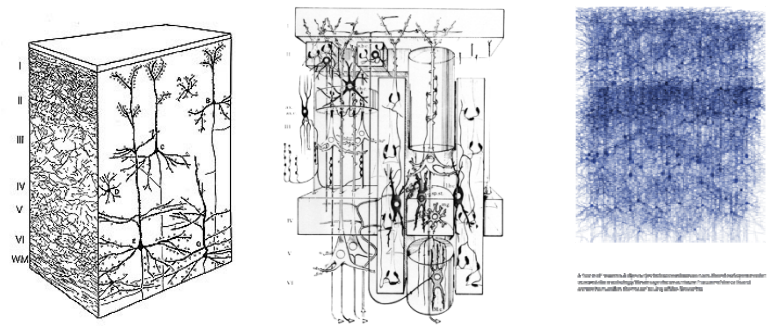


Figure 76 Human Brain Cortical Column Model János Szentágothai (1912-1994)

If there are many trillions of neuron combinations available to view the world what happens when you view the world and how does that relate to self? When training art students to assess how each person sees colour, a common exercise involves the setting up of a still life. Twenty students are required to re-create this set-up, by painting it onto an A3 sheet of paper. The still-life set-up consists of a small round table covered with a patterned tablecloth of different colour stripes. Around this tablecloth are pinned different coloured A5-sized paper squares, in fluorescent colours, in different places and different angles. On the table is a wooden bowl, containing different fruits, including a yellow banana and a red apple; also included in the bowl are a few tomatoes. Next to the table is a standard lamp, with a highly patterned flower lampshade with tassels hanging from it. The students are asked to recreate this still life set-up, using a piece of A3 paper, a brush and paint in the 3 basic primary colours of red, blue and yellow, mixing these colours to recreate the still-life colour set-up. On completion of this exercise after one hour, the finished work is placed in a row and the painting that best described the colours was selected. It was discovered that every student mixes her/his own interpretation of the colour range; not one painting was exactly the same colour. Of the finished still-life pieces each produces slightly different shades of colour. Each student views the still life in a slightly different colour range. When the tutor picks out the painting that she thinks is the closest colour match, no one else agrees, all students thinking that their image is the exact copy. This implicit dialectical use of immersive experience, in a dialogue between the artist and materials, creates the means for students to gain valuable knowledge of colour mixing. They realise that people see colours slightly differently, although the colour red, for example, is a measured mixture and is in the same colour range. This questions assumptive dialogue of the artist between his or her materials, creating possibilities that could enhance the experience of the artist. In blurring one's eyes, when standing in front of a painting, an artist begins the 'seeing' process as a strategy to begin

the creation of applying paint, then uses this strategy throughout the process of the painting. This visual strategy helps to delineate portions of the world-view, enabling abstract shapes to appear and details to disappear. This helps to bridge the gulf between the inner artistic vision and the outer appearance of the 'real' world, in front of the artist. These abstract shapes become a 'hook' on which to hang the fine details of a painting. Creativity is an area of personal excellence, mental giftedness, and mental mastery. Martindale (1975) declared; "[c]reativity is a matter of having the right brain waves. When creative people go to work on an imaginative task, their Alpha-waves jump".

7.5 ATTRACTORS

Ramachandran (2003b) suggests that there are 10 universal laws of art, including grouping, isolation, perception or problem-solving, repetition and metaphor. When examining a game, which of these elements are found in game-play? It could be argued that all of them are. So does playing computer games make you an artist and/or even an art critic? He states that, "[h]uman artists through trial and error, and through intuition, have discovered the figural primitives of our perceptual grammar. They are tapping into these". He continues; "[v]ision evolved mainly to discover objects and to defeat camouflage".

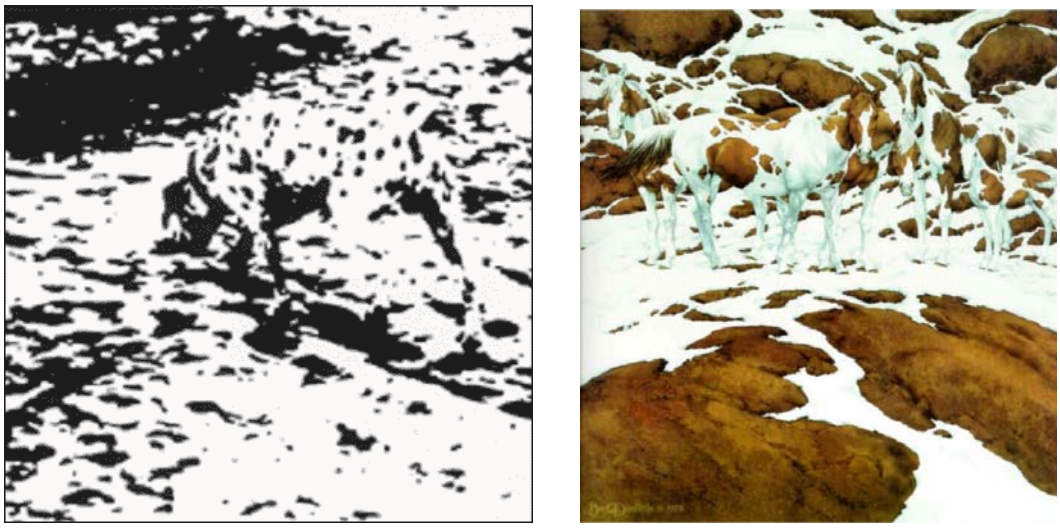


Figure 77 Can you find the objects?

7.6 PUZZLES

What about puzzles? According to Ramachandran, "[p]erceptual problem solving evolved because we were originally living in highly camouflaged environments, so the

wiring of our visual centres to our emotional centres ensures that the very act of searching for the solution is pleasing. (Can you find the object concealed in Figure 77, when you do - have you said to yourself Ah ha!)". According to Merkle, (1989), a human can recognize an image in about 100 milliseconds, which can take at most 100 one-millisecond synapse delays. A single signal probably travels 100 millimetres in that time (from the eye to the back of the brain, and then some). If it passes 100 synapses in 100 millimetres then it passes one synapse every millimetre - which means one synapse operation is about one Ranvier operation. This is similar to what was happening to participants, when they named the abstract objects contained within 'Star World's' environment. Merkle reviewed and quantitatively analysed experiments by himself and others in which people were asked to read text, look at pictures, and hear words, short passages of music, sentences, and nonsense syllables. After delays ranging from minutes to days the subjects were tested to determine how much they had retained. The result of this work was the discovery that human beings remembered very nearly two bits per second under all the experimental conditions, visual, verbal and musical. "Continued over a lifetime, this rate of memorization would produce somewhat over 109 bits or a few hundred megabytes" (Merkle, 1988). When one thinks of all the various information forms that are available through super-fast broadband connections, enabling more information intake, haute games become even more important to offer participant-players an alternative experience.

In a discussion on Gestalt psychology, Berhans describes an essay, written in 1923, by Wertheimer, who hypothesised that "certain gestalts are enhanced by our innate tendencies to constellate, or to see as belonging together elements that look alike (called "similarity grouping"), are close together ("proximity grouping") or have structural economy ("good continuation")" (Berhans, 1998). This patterning facility was used to create coding systems using mathematics and the prime number ciphers currently used to secure credit card payments made online. This can be likened to pixels used to create patterns, which can then be 'read' or seen as a structure, or even a person.

How does this apply to computer-game players? Player's engage with a virtual play-space, completely constructed by pixels, but most follow rules of real-life construction, for example, a 'floor' is solid, a door can be opened and walked through and there is normal gravity in the game space. These abstract spaces have been tested by

many painters, for example, Jackson Pollock and Gerhard Richter, "Why does a painter like Gerhard Richter oscillate between the sharply graphic and the blurred?" (Forgacs, 2004).

Figure 78 'AB See' Gerhard Richter 1997 (b1932)

In inviting a viewer's cooperative, projectile imagination, as allowed in the painting illustrated in Figure 78, the viewer generates a subjective image, which expands in time, drawing the viewer into the piece, permitting them to project a part of their 'identity' into the piece and allowing a greater integration than by placing a representational piece on show. The computer game, 'Rez' accessed this integration and immersion, in a similar way as many computer games do, including 'Pac-Man'. "Attractors are thus the means by which players are coaxed into following a particular course, choosing between possible courses, or changing course. An attractor might lead a player into a position where another attractor becomes perceivable and follow this to a previously undiscovered retainer" (Fencott, et al., 2002). In the 3rd century BC, a passage from the Chinese book 'Tao Te Ching' argues that, although a wheel is made of 30 spokes, it is the space between the spokes that determines the overall form of the wheel, as seen in Figure 79.

Figure 79 Wheel Spaces

Here, the viewer is actively complicit, because genuine beauty "could be discovered only by one who mentally completed the incomplete" (Kakuso, 1906). Leaving part of a shoulder un-drawn allows the brain to complete the puzzle, a common strategy employed by artists, when drawing from life, leaving the drawing partially unfinished, so as to allow 'entry' by the viewer to create a narrative with the piece, allowing the viewer to interact within the picture plane. I argue that allowing participants to create their own narrative scenarios within 'Star World' enabled a blending to take place within the virtual game environment. The piece in Figure 80 shows how the lines taper off into the bottom third of the picture plane, allowing access to the viewer and helping them to engage and create an internal dialogue and narrative with the piece, inviting further investigation.

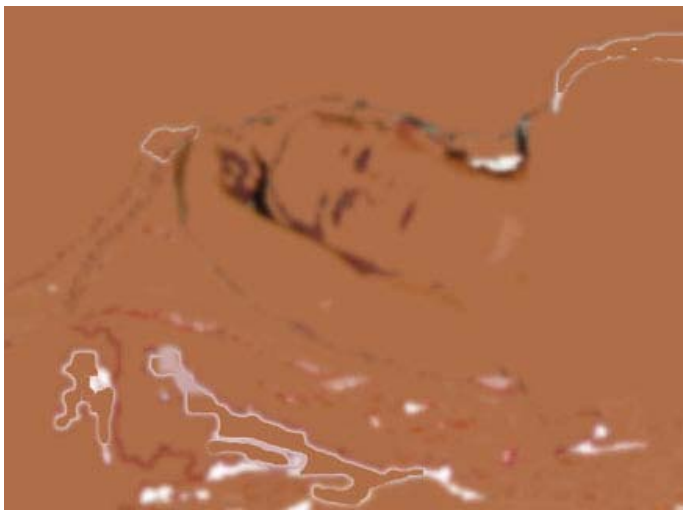


Figure 80 'Life drawing' Maggie Parker © 2005

Artists are often political in their work, creating scenarios to bring to the surface with their imaginary 'virtual' views that sometimes cannot be written about. Games, by their very virtue of imagery, could make metaphors and genres that have other effects on their players. Playing games has always happened, even as far back as the beginning of civilisation, but recent computer games over the last forty years, have created new opportunities to engage the player in a 3D environment, rather than playing games on a flat 2D surface. Games, such as chess, allow engagement, in a 3D sense with sculptural pieces but in a static environment. Playing 'Fable', one player reported; "I was walking through the landscape, but couldn't relax as I was watching for the next puzzle". Watching this player play the game, even when they described themselves in the game as 'walking', they were in fact making their character 'run' through the environment – the 'gamers run' seems to be a common way to navigate around an environment. Watching

this activity, I certainly did not feel relaxed and the player reported feeling watchful, not really a state I would describe as 'restful'. One female gamer, on describing her experience of a multi-role-player game, explained; "I've been playing games for so long that I take some of the circumstances of the genre for granted. That one is always alert, ready to defend one's life" (Eladhari, 2004).

7.7 CHANGE OF SELF

Alternative methods of game-design mean that new categories of games are being created. Games, such as 'Technosphere' (Prophet, 1995), while not becoming a commercial success, allowed engagement with the game-space by utilising a different aesthetic. It is argued that games like this offer new ways to generate games, by observing what people want to see and play and how players can engage with different emotions in an unreal environment. This allowed the blending of emotions different from real-world interactions. The results, contained within the empirical research, that were presented in Chapters Five and Six, offer new opportunities, to create alternative interactions with abstraction. This was highlighted by the many, alternative descriptions of objects by participants. The creation of new environments that are abstract, rather than representational, could afford changes in player's self-identity. For a few years, the games industry has been striving to create more and more representational environments, building upon the speed and quality of new graphics and processing software. There must come a time, however, when there will be a point that technologies reach a stasis point, creating time to experiment more with abstract spaces and content. Why do designers or artists continue to strive to represent the 'real world' in the virtual world? It could be argued that 'change of self' is what drives many computer-game players, particularly casual players, who do not, necessarily, want to just 'beat the game', so do we really need to build a game environment that is realistically represented? Originally, games were produced from simple abstract shapes, which engaged the players just as effectively as the graphic-heavy games that are being produced today; a simple game of 'Tetris', or even 'Solitaire' can be just as engaging as a heavily-realistic environment, such as 'Half Life'. 'Tetris', 'Sudoko' and 'Solitaire', are all examples of games we play to take us from the reality of our world into different realities, a 'Game Reality'. Adams believes that "[p]eople will be playing Tetris a thousand years from now. Tetris is so beautiful, so elegantly simple, that I believe it has an appeal that could last for centuries.

Tetris doesn't belong to the literary arts, since it has no narrative, but to the visual arts. I think Tetris is a work of kinetic sculpture, and I could easily see it sitting in an art museum". He goes on to say, "[t]he first requirement of the artwork in a computer game is of course to serve the game play". Depending on the game played, game-play can be fast or slow and, in 'Tetris', for example, the artwork is not sophisticated, but the graphics play an important part in the players' experiences. He argues, "[t]here is nothing about the microprocessor or the monitor that requires games to be about shooting aliens or searching for treasure" (Adams, 2001).

7.8 'GAME MODDING'

What can happen when artists are given software tools and packages to 'play' with, 'play,' here, meaning experimentation with models and materials encapsulated within the game-shell? 'Game modding', is a term used by computer-game players, which means the design of the game and environment are altered by the player of the game to their own design. Examples of modding, included here, illustrate what can be achieved when artists, including fine artists, painters, printmakers, graphic designers and other creative fields, have a chance to engage with software. They show the alternative and creative uses that the software can attain, as illustrated by Figure 81, shown by Engeli (2003). 'Dream Day', is a 'mod' of an environment in the game, 'Unreal Tournament'. This game has a software package included that allows the player to create her/his own game environment, which can then be shared with other users, making a connection with other players and creating a sense of community.

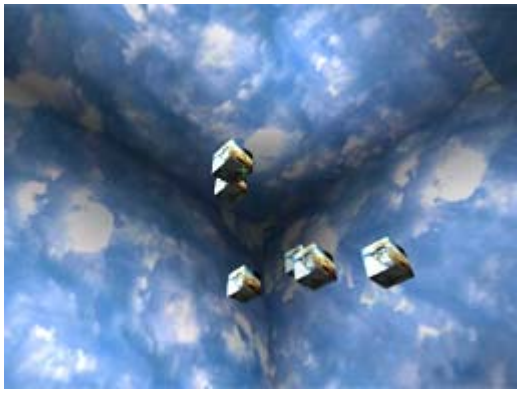


Figure 81 'Dream Day' by Mark Dietrich and Michael Huber Digital Image 2003

Figure 82 'Arctangent' Casey Reas 2002

7.9 ARTISTIC ENGAGEMENT AND INFLUENCE

Artists can subvert software by 'modding' game-levels, exploring, manipulating and blending different elements of the game-shell. They can explore materials, the artist changing a functional, or aesthetic element in an existing game, or in existing coding, creating their own version of how that coding will be displayed, to create their own versions of 'games' to play, as shown in Figure 82. These interaction possibilities with coding were meant to create a play-arena, which was created by "a collage of ideas" (Reas, 2003). As seen in Figure 83, the music artist, Mike Oldfield (2003) created a VE in which players listened to a selection of his music, while wandering around a virtual universe. They discovered alternative ways to create a story unique, to themselves, subliminally affecting their emotions and self, when engaging with the environment. This was an alternative way to engage with music, in a similar fashion to 'Technosphere', using the internet to engage with art and technology.

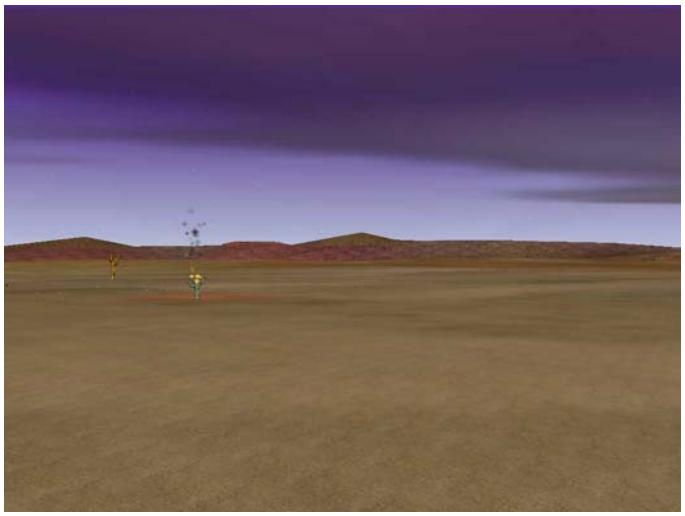


Figure 83 'Virtual Soundscape' Mike Oldfield 2003

7.10 ARTIST AND PLAYER

Using alternative technology (the Internet), Jane Prophet (1995), an artist, working with art and technology said, "[t]he Internet is a very specific type of site, it enables a particular kind of interaction with your audience, so as an artist you get a tremendous response to your work". She added, "I am encouraging the user to forget about the identity of the artist". She created the virtual environment, 'Technosphere', as shown in Figure 84, which was dependent on the collaboration of users.

Figure 84 'Technosphere' Jane Prophet 1995

She commented at the time "[t]he boundaries between the artist and consumer are blurred and the notion of the single genius artist is disrupted further as collaboration can take place on a global scale. Once created, a work of art is what it is, and the artist, though of course a valuable heuristic source of insight about its meaning, is not an absolute authority". This can be seen to be a forerunner of the 'World of Warcraft', a scene of which is shown in Figure 85. Online players take on a role or become an avatar, assuming the roles of 'Warcraft' heroes as they explore, adventure, and quest across a vast world (Blizzard Entertainment, 2006). Players explore and manipulate the game environment, making it into their own.

Figure 85 'World of Warcraft' Screenshot

In addition to its artistic characteristics, the content of this art-form is dependent upon the dynamics of a real-time process, which give vitality and life to the visual display through animation and user-interaction. The participant becomes acutely aware of 3D space, as images are changed dynamically, this perception representing an important restriction in the aesthetic experience. Game designers and artists create real-time art objects, which also have to deal with fundamental concepts, including motion. Complexity can be an essential ingredient of a sophisticated work of art; aesthetic experience may be intensified, if visual imagery can be presented in a form to engage participants. I argue that, within a predetermined context, the combinations of aesthetic relationships in real-time art systems are almost infinite.

Real-time computer-art objects are a unique art form. The artist can create new objects and new worlds, in real-time art systems, or she or he can simulate objects from the familiar world of physical interactions. Areas of view can easily be introduced, which contradict or extend the way objects and their properties behave in the real world. The combination of artist, computer hardware and software technology, suggest a fundamental change in how an artist approaches creativity. The artist must now work with a concept of creativity that makes no distinction between the human and the computer. In a psychological sense, the computer is implanted in the artist's brain and there is a harmonious relationship between the two. The science-fiction notion, of the human brain directly connected to the computer, is a kind of metaphor to describe this concept of creativity. The real-time computer-art objects in these games are designed so that the user through participation realises an aesthetic experience. The passive player must become an active participant in the actual context provided by the game. A case can be

made for the idea that art can alter perception and because perception is an active organizing process, by actively participating with the game, one can perceive it and in perceiving it, blend one's own self-identity with the aesthetic game environment and character structures. This practice should be conceived as an aesthetic process, which includes basic images, the human-machine interface and the strategies used by the artist to design the art system. The relationship that the artist establishes with the software and the way that the investigation of the software package takes place, determines the kinds of option s/he can offer participants these options determine the way that participants interact with the game.

7.11 PERSUASION

Many artists come to the conclusion that most subjects need some form of codification, idealisation, redesigning, solidifying or stylisation. "The real truthfulness of all works of imagination - sculpture, painting, and written fiction - is so purely in the imagination that the artist never seeks to represent positive truth, but the idealized image of a truth" (Bulwer-Lytton, 1803-1873). There are many ways of investigating the world, including empirical science, qualitative and quantitative methods, art practice and other humanities-based approaches. It could be hypothesised that computer games are texts and, "by using both artistic and empirical methods of analysis and development, semiotic analysis could be an effective tool in finding out what computer games mean to people and why they find the process of meaning making (game playing in this case) pleasurable" (Fencott, et al., 2002). There are various "communicative situations which enable the transfer of information" (Lotman, 1981). One of these communication systems could be beauty. Lauria (1997) asks, "[w]hat forms of beauty might we experience in VR? Is the grasping of beauty metaphysics itself? Is there a seduction factor to be considered here that could lead to an abuse of a deeper reality?" If beauty, aligned to the sense of seduction and complicity are used as agency, making players more aware of that part of their self-identity, would it immerse them more into the environment and make them forget where their bodies are, in real-world space?

A BBC Radio 2 programme investigated the subject of beauty. What is beauty? Does it exist in object or subject, or do things possess qualities that depend on the range of objects to which it is applied to? Can it be intellectual or moral beauty (Hobbs, et. al., 2005)? How does beauty relate to usefulness? Plato, for example, said

that beauty has perfect forms and properties. Pythagoras linked beauty and the universe as a beautiful harmonious whole, in a numerical geometrical order; the building-blocks of the universe connected to musical harmony and geometry. Aristotle believed that it was contained in symmetry - things arranged in a way that is appropriate to them, their particular function and goal in appropriate order. In setting an agenda for the description of beauty, these philosophers believed that beauty could be a natural function of things, in the organic world; that symmetry could be expressed, mathematically, as a measure of beauty and that beauty, as proportion, could create perfectly symmetrical and ordered building. Art as beauty, in mathematical proportions, is represented, in this arena, by the perfect proportion of the perfect human figure, drawn by Leonardo da Vinci, shown in Figure 86. Proportions that he set out include the following; a palm is the width of four fingers, a foot is the width of four palms and so on, until he had measured all proportions of human anatomy.

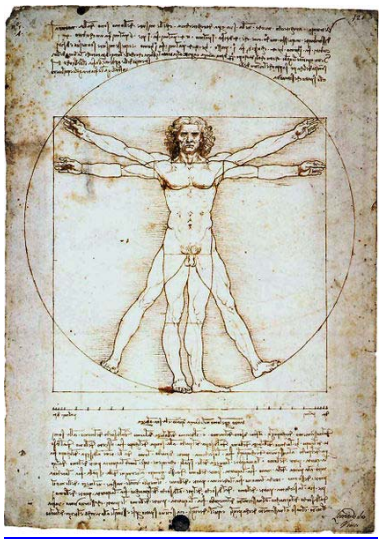


Figure 86 'Vitruvian Man'
Leonardo da Vinci approx 1487

Figure 87 'A Young Hare' Albrecht Durer 1502
Watercolour and gouache on paper

Durer measured proportions in connection with outwardly beautiful things. Using this method, art can facilitate this process by making an image in perfect proportions, as seen in Figure 87. Looking at organic objects gives the notion of beauty being fragile and ending; that beauty exists in the mind of the contemplator. Alexander (2002), writing about architecture, makes some assertions, including the following, that could be universally applied to other disciplines including art:

Range of sizes is pleasing and beautiful

Good design has areas of focus and weight

Repeating elements give order and harmony

Background should not detract from the centre

Texture and imperfections give uniqueness and life

The last assertion is now being used to create texturing on models, characters' skin, clothing, and other game elements to add a realistic quality to many game environments.

7.12 HUMAN RESPONSE

People have developed a faculty to appreciate beauty which reflects a universality of human behaviour - giving objectivity to beauty. We can still make our mark with brush

and canvas, or chisel and stone, but we also have a plethora of software tools available, to create work without any constraints, other than imagination. Not every artwork, novel, photo, or digital product is creative or aesthetic, but broad access to powerful tools expands the potential to produce revolutionary breakthroughs. Creative people often benefit from advanced technology to raise their potential and explore new domains. As Adams (1952-2001) pointed out, "[a] computer is an interface where the mind and body can connect with the universe and move bits of it about. Imagination gives one a sensory manifold enabling the capacity of objects to stimulate this beauty within us". Each culture expresses itself in its art and culture. Fuller (1988) wrote; "[t]he early philosophers of the aesthetic recognised that a great many natural phenomena - flowers, minerals, waterfalls, landscapes, forests and the song of a nightingale among them also gave rise to an aesthetic response…unrelated to use, price, necessity, or whatever". Discussing content design for virtual environments, Isdale (Stanney & Erlbaum, 2002) points out; "[a]esthetics tells us where to look for abstractions, where one cannot afford to make cuts". Content could be developed to enable agency first of all and using these abstraction puzzles could "function together to deliver the aesthetic pleasures of a virtual experience". Lindgaard and Whitefield (2004) state; "[a]esthetics is not a trivial function, even though it may be considered so by those who favour more ergonomic and technical performance-based functions. Aesthetics is manifest in every facet of 'designed' life, from the clothes that we buy to the homes that we furnish to the cars that we drive to the offices that we work in". We can include, in this list, the computer games we purchase and play.

7.13 Flash of Inspiration and Connections

Aesthetics, created in the space of game environments help viewers to take a journey and allow interaction with the game-space environment. For aesthetics to work science could help to understand creativity, consciousness and the self, to create models of process to measure intuitive process, which is what science cannot describe. Logic is a formal set of rules, but what science cannot describe is that flash of inspiration, understanding, intuitiveness of the inspiration, or idea. Occurring in the 'strange space' of brain activity, this 'flash' of inspiration, understanding, or intuitiveness is also what science depends on to make the breakthroughs that are needed. One may decide to accept the theory, or not, but it appears to one as a 'truth'. Understanding and memory are not data-driven and, in

thinking of inspiration in this way, one loses understanding of the thinking process; the way in which electrical activity in the brain sparks and blends in new connections of neurons, creating variations of understanding, in this 'Strange Space'. The aesthetics of empiricism are feelings for materials and models rooted in empirical practices, as Einstein said; "[i]f you are out to describe the truth, leave elegance to the tailor" (Einstein, 1879 - 1955). I am left-handed and living in a right-handed world, so having to negotiate my way through this world and use tools designed for right-handed use has made me create and invent alternative coping and thinking mechanisms. I am ambidextrous, in fact; when I was quite young, I realised I could write with both hands at the same time, forwards and backwards, from a beginning centre-place on a piece of paper. Experimenting with this skill, I hold one pen in each hand, with my hands together in front of me, with the pen tips together. Beginning with both hands held in the middle of a sheet of paper, I write with my left hand, from right to left, the words being written backwards in 'mirror' writing; my right hand at the same time is writing from left to right with the writing facing in the correct reading direction. While this actual writing process occurs, I am conscious of the part of my brain that controls this process. Interestingly, the writing produced from this action is much more like my 'normal' handwriting, whereas, if I write with my left hand only, creating 'mirror writing', by writing in the opposite direction from right to left, the writing that I produce is much more flowing, elegant and more true to how I was originally taught to write, using the script taught in schools in the 1960s. If I write, using my right hand in the normal left-right direction, the script is similar to the writing I produce when 'mirror writing' with my left hand. While these processes are ongoing, I can 'feel' the connections happening and blending together inside my head. Being aware of this process has made me question how neurons blend together. This was described as "searching systematically and serendipitously for new perspectives and insights into practice" (Stewart, 2003). So, what new things can one do when playing games?

7.14 CONNOTATIONS IN GAMES

When playing games, one can command armies, rule worlds, and change identities. One can navigate through unfamiliar territory, shoot, maim and kill 'people', build cities and solve puzzles, but games can be used to do other things and create other meanings; the screenshots shown here, Figures 88 and 89, illustrate scenes from the computer game 'Rez'.

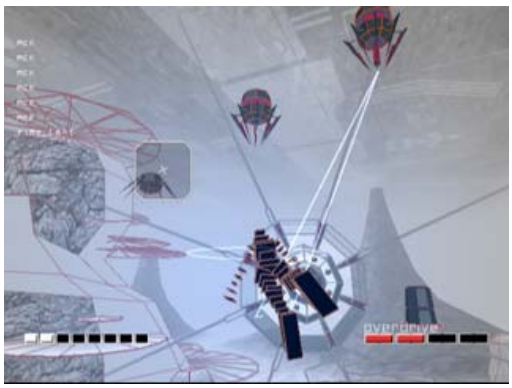


Figure 88 ‘Rez’ Screenshot

Figure 89 ‘Rez’ Screenshot

Tetsuya Mizuguchi, game developer, created the game ‘Rez’ (Sonic Team Sega, 2001), whose aesthetic levels were derived from the synesthesia school of artists, painters, composers and the painterly aesthetic of Kandinsky. When playing ‘Rez’ the player is immersed in an abstract patterning of sounds, visual images, brilliant colours and abstract designs, which are linked to music. Although the players’ avatar has a humanoid shape, abstract shapes fly towards the player, which the player then ‘shoots’, causing these shapes and colours to combine with sound and explode on the screen. When playing this game I found that I became immersed in the game because of the game mechanics. It created a ‘flow’ state in me, the colours combined and re-organised to form pleasing patterns and the sound that was created added an extra dimension to the game. ‘Katamari Damacy’, illustrated in Figure 90, is also another innovative game, where the surreal concept is a real, ‘think-outside-the-box’ game genre.

Figure 90 'Katamari Damacy' Katamari 'clumps'

When the game begins, the player is given a katamari (which roughly translates to "clump" in Japanese) not much bigger than yourself. "You roll this around, collecting anything you can to increase its size, sticking stuff to your katamari by rolling over it, and almost everything in the world around you is fair game - the catch is that your katamari has to be big enough to take all these items on. The shapes of the things you collect affect the overall shape of your katamari, thus affecting how it actually rolls. So, if you roll over a bunch of pencils or a ladder or some carrots, it can make your going a bit more challenging" (Davis, 2006). Most of the levels in 'Katamari Damacy' are simple races against the clock; the katamari has to be a specific size before the clock runs out. There are certain constellations, however, that require a katamari to be built out of specific stuff that corresponds to the shape of the constellation. Pisces requires the player to collect a number of fish, while finding the biggest bear means that Ursa Major can be recreated. The game begins inside a Japanese home, then moves the player outside, then into town and keeps going from there. Play features ball-rolling and object-collecting game-play mechanics. Davies reports "[Players] go from rolling along a tabletop to ravaging through city streets, picking up momentum and skyscrapers along the way".

The disparity of the game of 'Katamari Damacy' nevertheless, has, I argue, has similarities with artist Dew Harrison's 'StarGlass' (Harrison & Parker, 2006). Originally intended as an interactive art piece, this 'art' or 'game' shows how user-engagement was encouraged through means other than those usually employed in games (see Appendix VII:I). Created in 1997, it was never considered as a 'game', but as a further exposition of the ideas of Marcel Duchamp in alignment with post-conceptual art and new media. This piece also uses star constellations as a visual 'hook', but in an alternative method of interaction as seen in Figure 91. The screen image is of a black sky full of stars in their planetary positions; by rolling over them and around the sky, the stars link into

astrological clusters, Leo and Virgo. Clicking on one (their own?) particular birth sign, takes viewers into the mind of Duchamp and a 21st century 'Large Glass'.

Figure 91 'StarGlass' Virgoan stars (pinkish), the 3 smaller stars (bluish, on left) and a Duchampian object (Étant Donnés) Dew Harrison

'StarGlass' is not goal-oriented, nor does speed matter and increasing levels of game play do not exist here, but, discovering the relationships between objects brings understanding and these little 'epiphanies' can be seen as 'goals', or levels in themselves. Figure 92 shows an example of the interaction created when clicking one of the star signs.

Figure 92 'StarGlass' Virgo birth sign stars arriving at the Large Glass ready for play

"You could say that the aim of this computer game is to make sense of it through exploration, the strategy is the semantic association of the multimedia objects within it, as presented in the initial vision for the 'all-purpose machine' to augment human thinking - the computer" (Harrison & Parker, 2006). 'StarGlass' is an alternative, but complementary environment; design ideas within the 'Star World' are reflected in 'StarGlass'. Both pieces have an aesthetic and game strategy outside the usual gaming industry conventions. Both allow the player to take their time and explore the given environment, as part of the game play. 'StarGlass' was never considered as a 'game', but as a further exposition of the ideas of Marcel Duchamp, in alignment with post-Conceptual art and new media. 'Star World' is intended as a stress-free game

environment for players who want to relax in their leisure time. This game uses visual aesthetics, often abstract and painterly; it extends game design into something that could easily be situated in an art space and begs the question, "[w]hy aren't creative games shown in white cube galleries?" (Harrison & Parker, 2006).

7.15 Artistic Activity

According to Bourriaud (2002), "[a]rtistic activity is a game, whose forms, patterns and functions develop and evolve according to periods and social contexts; it is not an immutable essence", in agreement with this somewhat Duchampian comment, although the 'StarGlass' structure plays out as a game, it also plays with one, in that it purports to offer an individual reading of the work tailored according to your astrological birth characteristics. Of course, everyone 'reads' an artwork differently so keeping the piece alive and open to interpretation; "a work of art is dependent on the explosion made by the onlooker" (Duchamp, 1996), but 'StarGlass' gives an ironic view of this understanding.

7.16 Engagement and Interaction Aesthetics

'Katamari Damacy' and 'StarGlass' are similar, non-threatening environments, with interactivity available in the form of outside interfaces (keyboard, stick) and similar types of engagement with the user. The star constellations in 'StarGlass' are an integral part of the game-play element, tying all pieces together to make coherent projections and connections in the player's minds. 'Katamari Damacy' has bright colours and a cartoon appearance, whereas 'StarGlass' shows a dark sky and star constellations, in a black screen, but both have their own aesthetic quality. Aesthetics include things perceived by the senses, criticism of taste, perception of the beautiful and philosophy of taste. The most commonly used meaning of aesthetics, these days, is the characterisation of the particular pleasures that a medium has to offer. In distinguishing these separate games or art pieces, from their notations and various physical realisations, those broad types that arise as a product of fine art and those that arise as a game product, always produce physical entities. Sometimes, there is only one realisation, as with architect-designed houses, couturier-designed dresses and many paintings. All these products produce their own aesthetic readings. "Studies are beginning to show that task-unrelated (aesthetic) qualities such as colour, graphics and music can play an important role in enhancing both usage and enjoyment of information systems [and computer-game environments]"

(Hassenzahl et al. 2001). Meister (2001) and Lindgaard & Whitfield (2004) remind us that; "it is necessary to identify and discover how covert, invisible mechanisms function in humans to understand and predict behaviour".

The computer game 'Darwinia', has its own aesthetic quality, while still using a massive landscape space to navigate around, with 'Tron-like' surfaces (Lisberger & MacBird 1982). Using a saturated colour palette the environment, shown in Figure 93, becomes a 'super-real' environment. Navigating around this environment, a player is given the task of destroying the Viral Infection and saving the Darwinians from extinction.

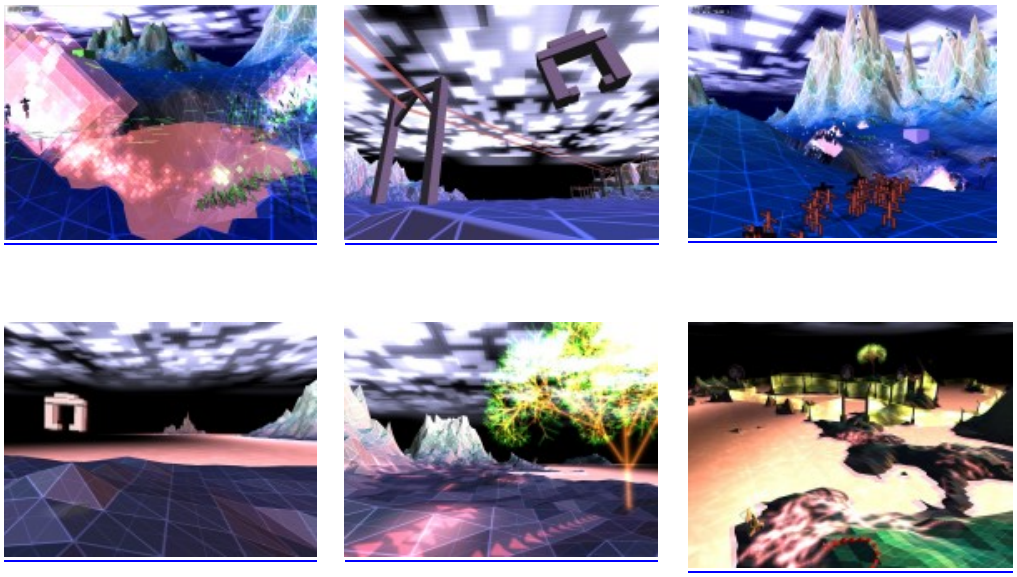


Figure 93 'Darwinia' in game Screenshots Courtesy of Vicky Arundel

The game company, Introversion, in creating the world of 'Darwinia', describe the game as "a virtual theme park, running inside a computer network" (Arundel, 2006). Another game, in these alternative haute-game models is 'Madrid'. This game was created in response to the September 11th attacks in New York and the USA, to indicate the futility of war and terrorism. 'Madrid' (Newsgaming.com, 2004), is a form of digital meditation; the player is invited to brighten candles which are dimly lit, in memory of victims of terrorist attacks all over the world; the player has to re-light the candles as they go out. It is a metaphor commenting on the futility of war, since the player finds that it is impossible to get all the candles re-ignited for the whole of the game scene. This game play differs from 'normal' game play, in that the player cannot win, but can, at best, only achieve a stalemate, as illustrated in Figure 94. 'Madrid' invited responses, including

comments regarding the effectiveness of gaming having the power to raise political awareness.

Figure 94 'Madrid' in game Screenshots

At an exhibition in Austin, Texas at the Gallery of Contemporary Art (2006), I had the opportunity to engage with a piece of interactive art. Created by artist Zack Booth Simpson and titled 'Moderation', as shown in Figure 95, the viewer was invited to 'walk' on virtual 'water'.

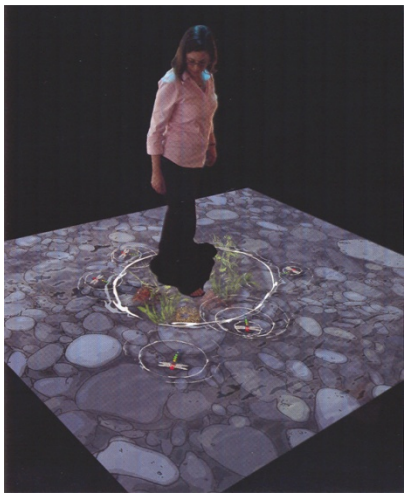


Figure 95 'Moderation' Zack Booth Simpson 2005

If the viewer walked slowly around the board on the floor, a projection from above, activated by a sensor, would operate a computer algorithm, which, in turn, projected the image of a pond on the floor. If the viewer-participant continued stepping on the 'water' they were rewarded with 'dragonflies' appearing and 'flowers' blooming in the 'water', but if they moved too quickly the display switched off, disappeared and the floor became blank. The piece was called 'Moderation' meaning, to control something, so that it is neither too much, nor too little. The movement of the participants was important; if they moved too quickly, the piece switched off, but equally, moving too slowly also caused the

piece to switch off. In mentioning this piece it is important to recognise and pose the question, is this art or is it play? I believe that it is both and argue that this is another example of artistic practice using technology in an alternative practice, combining art practice and scientific investigation, producing an alternative opportunity to interact and engage with images, creating a new aesthetic space. When playing a game, the player is interacting with the imagery; here, the artist is 'playing' a game with the viewer, the game of 'Moderation'.

In analysing these games, the opportunity is available to look at the creation of the game from an art practice perspective. "Art perception offers action affordances for the self-generated movement of the eyes, the mind, and the emotions; thus some scenes are 'easy to look at', and evoke different kinds of mood depending on what kind of affordances they present for the eyes, the brain, and the action schemas. Art can do this only because perception is active rather than passive, and begins with efferent activity in emotional brain areas (e.g. hypothalamus, amygdala, hippocampus and anterior cingulate)" (Ellis, 1999).

While distracting the computer-game players from negative feelings it is important that the positive feelings, such a sense of well-being and achievement, are not lost by users feeling frustrated because if they had gone a bit longer, for instance, they could have achieved progress to another level. An interactive game, produced for older adults when exercising, was operated by a lead attached to an exercise bicycle; when participants pedalled, a monitor screen attached to the handlebars showed them moving through an underwater scene, as they pedalled (van Schaik, et al., 2006). This game did not have any levels to complete, as it consisted of one scene through which participants navigated the environment as slow or as fast as they pedalled the exercise bike. This game was to persuade participants to keep exercising in order to gain fitness. Another environment that tested participant response was 'Desert Rain'. Standing on a footplate and zipped into a cubicle, each team member explores motels, deserts and underground bunkers, communicating with each other within the virtual world... a world projected onto a screen of falling water (van Schaik, et al., 2004). If games are considered as an art form because of their visual nature, then, I argue, innovation, experimentation and diversity is important. These products are important for artistic, rather than technical reasons, giving an opening for new genres and new spaces to be explored. Exploring alternative

aesthetics through new environments could revolutionise the game industry. As Ramachandran argues, "the instances of peak shift in art are too widespread to be dismissed as nonsense. In depictions of the human figure, Michelangelo's over-the-top musculature, Renoir's ample bottoms, and the distortions of El Greco, Giacometti and Modigliani input a measure of over-amplification. Extremes of colour developed from the Impressionists, and the Fauves, to the advent of colour field and colour vibration, have sometimes led to the flagrantly gaudy" (Ramachandran & Hirstein, 1999). 'Electroplankton', by Nintendo shown in Figure 96, is the latest work by Japanese media artist Toshio Iwai.

Figure 96 'Electroplankton' Toshio Iwai

This interactive game was created to respond to a player's touch and voice creating unforgettable sounds and melodies. In creating 'Electroplankton' for Nintendo's DS platform, Iwai's goal was to give players something that would make them "feel good when touching it". This is game-playing that tries to give players a positive emotional response and experience with an interactive environment. One player reported that he returned the game because he became bored, but could understand that non-computer game players would enjoy the game, if they were not used to rising through a hierarchy of structure, to get to the top level of a game.

7.17 HAUTE COUTURE: HAUTE CUISINE: HAUTE GAMES

Memes are like genes, in that they carry characteristics from one generation to the next, living within culture and environment. Dawkins (1976) has noted, "[d]ifferent schools and genres of art can be analyzed as alternative memeplexes, as artists copy ideas and motifs from earlier artists". Changing our mimetic beliefs means that we could become haute-game creators, pioneers of new ways of looking at things. Haute couture actually runs at a loss, but by 'selling-a-dream', fashion shows attract huge media attention and gain enormous publicity for the couture houses. They are important to the rest of the

industry for the innovative, creative ideas that its designers produce. Similarly, for haute cuisine, 'super-chefs' are producing complicated food, with lots of processes that probably, will not be re-created by a normal person, but the fact that the chefs produce these dishes becomes disseminated into our cultural awareness, affording us the possibility of creating - maybe not the original dish - but a simpler version of it. These industries sell a dream of the intangible, as does the game industry; a dream of entering into a fantasy land of dreams. The piece by Iwai is an example of selling a different fantasy, the exploration of players' positive emotional response, as is 'Star World', as a template for future 'engaging' gaming experiences. There are limitations to the low levels of immersion and the use of content can dramatically affect people's responses to the environment available through these pieces. Perhaps, deeper immersive experiences can be achieved by gentle forms of alternative interaction, enhancing the environment to reinforce perceivable content. The difference between 'Electroplankton' and 'Star World' is that 'Electroplankton' has been programmed to produce predefined rewards for particular actions from a user, but this is not the case in 'Star World'. The environment has been created, purely, for gentle interaction and stress-less navigation, with the minimum of alertness activated. "Stress management and wellness health care is not a new one, with roots based in the Greek Asklepieon dating from 480 B.C. This and later Western transformations for health promotion embraced the therapeutic amenity inherent in meditation, solace and communality with nature, based on the premise that the need for refuge from the stress inherent in one's daily life is deep-rooted in humans" (Verderber, et al., 1987). Why not create an 'haute-game shell' to contain this stress-relief, enabling engagement with relaxation and meditation? As participant 7 commented, "I could play for hours".

7.18 STRANGE SPACES

Self-identity becomes blurred when viewing imagery; who do you 'become' when game-playing? Viewers reported several ways that they interacted and blended with the environment, 'Star World' and named several objects according to their own internal self-view of their world. Aesthetic experience was a product of exercising more fundamental cognitive faculties such as perception and imagination. In the aesthetic experience, participants directly perceived a certain object or event (abstract shapes, a display of pixels, a series of sounds) and that perception gave rise to a cognitive activity

of a special, aesthetic type. Abstract artefacts were manufactured without the aim of achieving any particular state of mind in participants. They blended with the environment, using their own particular frames of reference, to interpret their experiences of these abstract shapes contained within 'Star World'. The creation of a new, aesthetic method of working and empirical testing was achieved by inventing an alternative method of communicating with self and self-identity, which contributed to the field of game studies. Participants who thought that they could never play a computer game were surprised by the ease that they were able to blend with the game environment. Are there any guidelines for artists or game-developers to follow which would signify to players that they are experiencing alternative methods of interaction with a game? Chapter Eight brings haute-game rules into the game study arena. These rules are a guide to what constitutes an haute game and pave the way for further discussion and debate.

SUMMARY CHAPTER SEVEN

This chapter examined the importance of changing the perception of the way computer games are viewed. It argued that changing the perception of game player's ideas and their self and self-identity highlights the need for experimentation with game design. This experimentation allows new ideas and design features to be implemented. Abstract symbols and patterning in computer games could produce virtual spaces, in which the self could be stimulated to engage even more with the software. The importance of abstraction, as basic codes, which could create environments and create strange-spaces on which self and self-identity is allowed to project, to facilitate interaction and immersion, was discussed. Using simple shapes, squares, circles and triangles, in another format, these underlying semiotic structures become a basic 'code', investigating game code and they are beginning to 'crack' underlying semiotic structures. It was discovered that abstract objects created multi-modal mapping possibilities which were enhanced by viewers' tendencies to constellate, or to see elements that look alike. This allowed participants to create their own narrative scenarios within 'Star World', which, in turn, enabled a blending with the environment, blending personal self and self-identities. Allowing alternative self-blendings, for example, relaxation could become a possible design feature for games. Experimentation with software to subvert, or change, game conventions has the possibility of creating new haute-game designs. These game genres have innovative possibilities, to allow emotional responses and to access emotions, self and self-identity, which could affect participants in new, unforeseen ways. How do we identify these haute games?

CHAPTER EIGHT:
HAUTE GAME RULES

8 OVERVIEW

This chapter sets forth rules to classify what an haute game is and how it can be identified. It discusses several questions that are important when discussing these rules,

What is the potential of computer game environments to create new self-blendings with self and self-identity that create a personal world?

Do we need new genres of games to play and new ways to interact with them?

Could new methods create new blendings and opportunities to use games to achieve gentle, seductive game-play?

What changes can be initiated from an art-science blending? What are the benefits of haute game' creation?

How could these new genres be utilised by game designers to interact with computer-game players by tapping into their self and self-identity?

In this chapter, art practice methods and scientific methods of production are investigated and the possibilities of what alternative interaction with VEs, contributes to the field of game studies.

8.1 INTRODUCTION

As discussed in the beginning of this thesis, the methods employed by both artists and scientists of application (learning material properties e.g. paint properties and their problems and applications), incubation (letting acquired knowledge gel), inspiration (flash of insight, creative synthesis, 'Aha' experience) and elaboration (polishing and testing) (see Appendix VII:B), was investigated as a method of alternative computer game, or environment design (Parker & Fencott, 2004). An alternative way to think about reality, when working as an artist, begins with the assimilation of unfamiliar images. This collation leads to abstract ideas that, only later, give way to a descriptive language. The cyclical methodology engaged in the way artists create experimental methods, is shown in Figure 97.

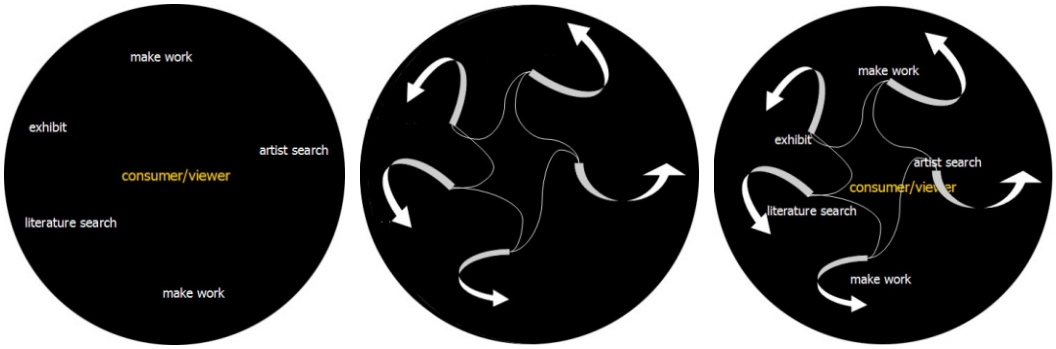


Figure 97 Cyclical Method Maggie Parker © 2004

The way a games company uses the 'play-test' cycle of Test>Evaluate>Iterate>Repeat, is very similar to art practice methods; however, games companies cannot constantly place their product into the market place, because of the expense of producing the game; there is also the company's reputation to consider if the game is an inferior product. Artists can exhibit their work, at any stage of production, for feedback. Games companies use iterations and beta testing, in-house, for idea-generation and evaluation, while the artist uses the catalyst of consumer-viewer as a gel, to meld ideas together in a crafted experience, as shown in Figure 98. This piece was exhibited as part of an exhibition; what was originally an evaluation tool became a piece of art, transforming into an ambiguous, metaphorical sign.

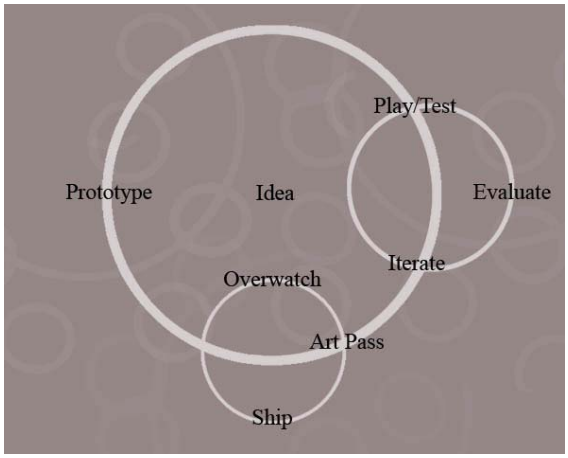


Figure 98 'Play/Test' Digital Image Maggie Parker © 2005

8.2 COMBINATIONS

In 1415, Brunelleschi painted a picture of the Baptistery of Florence on a mirror. This experiment led to the development of linear perspective [geometry], 3D drawing and painting. Combining artistic practices, computer science and data analysis, creates innovative opportunities, allowing participants to experience alternative ways of interacting with VEs, such as 'Star World'. In 2003, Laura Fryer told her audience that

games had the potential to change people's lives, offering them the chance to experience a wide range of emotions, in a safe environment. These environments which consisted of mostly imagery, apart from the text on HUDs, or character speech balloons, now have motion sensors, speech recognition, touch screens and other methods of interaction, including highly developed sound and music. As a self-confessed avid gamer, Fryer (2003) sees real value in video games, arguing that they have a key role to play in people's lives, "[p]eople need drama in their lives. Games fulfil emotional and mental needs that cannot be fulfilled any other way". People have different needs at different times, so what rules can be created for classifying computer games, to identify that they do fulfil a different need? What has creating the haute-game, 'Star World' (see Appendix VII:K), contributed to the field of game studies? As discussed throughout this thesis, various descriptions have arisen. In defining 'Star World' as an haute game, the following rules were generated to describe the environment as such; quoted in this thesis are other examples that fulfil these rules.

8.3 HAUTE GAME RULES: 'STAR WORLD'

The game-environment created opportunities to experiment with differing textures and imagery in a combination, which has the potential to introduce and describe new aesthetics.

['Star World': Chapter Four]

The game-environment connected and engaged with different emotions and affected player's responses to the environment.

[Chapter Six, for example, relaxation]

The game-environment allowed players to investigate and attribute meaning and form a relationship with object and environment.

['Star World': Chapter Five & Six, for example, 'Pac-Man' and 'Katamari Damacy']

The game-environment allowed risk-taking by artists and game designers, which create innovative methods of generating presence, interaction and immersion.

['Star World': Chapter Four, for example, 'Osmose' and 'Technosphere']

The game-environment enhanced emotional involvement with the game.

['Star World': Chapter Six, for example 'Ephemere' and 'Samorost']

The game-environment blended different fields together, for example, art practice, science practice and innovative programming.

['Star World': Chapter Four, for example, JoDI, Processing.org (Reas, 2002-2008) and 'Madrid']

The game-environment allowed SIT and also allowed the player an emotional response that was an alternative method to game-play, normally encountered by a game-player.

['Star World': Chapter Six, for example, blending self and self-identity with abstract objects]

When 'Pong' was invented, who would have thought how quickly and how massively the game world would grow and prosper? Haute games, in terms of their impact for future scholars, in the emerging discipline of game studies, bring an extra-dimension to game-analysis, allowing additional possibilities of interaction and examination. Because there may be no deadlines, artists and developers making these games can afford the time to experiment and, although there may be reputations to consider, take more risks to experiment and push forward game-design in other directions.

When participants were asked to navigate 'Star World's' environment, they created their own self-narrative, tapping into their own, personal self-experiences and blending these experiences and memories with the environment. When I created 'Star World', I had no intention of representing jewels, keys, lamps, ducks, fish or castles, described by various participants as having been seen in the environment. The potential was available for giving computer-game players an opportunity to interact with the environment, without pre-conception, which allowed participants to re-create their own self-identity. Blending with an environment, I argue, could be regarded as an aesthetic and, sometimes, a creative process, changing time, dimension, space and self. To create 'Star World', a meditative computer game, I utilised artistic practices acquired from art training. These multi-modal connections and cognitive processes enabled the production of a computer game, using alternative methods. In seducing the 'player' to interact with 'Star World', I interpreted reality by "[a]ppropriating gaming metaphors, design principles, and architectural technologies for alternative kinds of art-related content" (Parker, et al., 2005). The mathematical game-code equations form a chain of logic, to be manipulated and modified, forming intention to add an interpretive layer. Codes, physics and mathematical formula produced by scientists and mathematicians, can be utilised by artists to create new ways of describing something beyond description. New games being created by artists include games mixing genres and metaphorical references, to produce unexpected happenings and connections. At a conference in Beijing, I had the best attendance for any of the presentations, because the mathematical scientists were eager to see exactly what could be produced, visually, with their equations (Parker, et. al., 2005). Science, with art, is a wonderful combination, producing new interactions and new opportunities of combinations. It has been hypothesised that, "[t]he next revolution in games isn't technological - it's emotional" (Freeman, 2003). So how can games be created that grip players' hearts and guts, sweeping them into a powerful emotional

journey? Games already do this, but what 'Star World' is mapping are alternative emotions and techniques that entice a player to identify with their personal self-identity, leaving a player changed, even enriched, by playing the game. Participant 5 stated, "felt relaxed…quite relaxing…surprised when stopped…could spend hours". In 'The Sims', for example, the players create their own characters and treat them according to her or his personal schema; a new technique may involve designing and allowing for interaction with abstract shapes and forms, which can be included in game design, to enrich a player's immersive experience. Participant 3 created an interaction with the strange space that contained "[a] woman sitting, a statuette sitting on seashore". The environment enabled the projection of self-identity into something else, not an out-of-body experience that becomes especially heightened with figurative and narrative forms as experienced by navigants of 'Osmose', but a personal immersion, in a private blending of self and self-identity. As participants described various scenarios, for example, participant 1 stated, "I saw some hair or flowers…I didn't know if there was seaweed on the ground". This was a personal observation and interaction with the participant's self-memories; the environment did not, in fact, contain hair, flowers or seaweed. Participants became emotionally involved when looking through this distorted depiction of reality and began viewing this world in different ways, interpreting reality to weave a fantasy of imagination. As narrative becomes more expansive, participants create their own narratives. Exploring empirical methodology and art practice created an ambiguous environment. This environment allows participants to have new and different connection opportunities to interact and explore, making a space for them to breach their internal self-identity, which could create "new opportunities to explore transmogrification and creation" (Csikszentmihalyi, 1997). The creation of 'Star World' could, I argue, point a way to future improvements and ideas for creating alternative virtual environments. Figure 99 illustrates the beginning of the creation of a piece of work, or what could be the creation of a scientific experiment, much the same way as the scientist begins to break down nature into the its component parts, in order to analyse the relationship of its parts. As an artist, I utilised the software program, 'Visual Thesaurus', to generate inspiration for formulas. Imagine using that image as a way to navigate around a game play-space. These images were produced using the Visual Thesaurus, an alternative way of interacting with text, which I produced when 'playing' with the software.

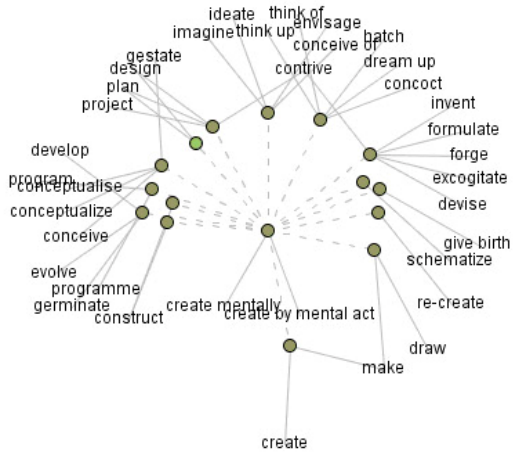


Figure 99 'Creation'

8.4 CREATIVITY AND SCIENTIFIC EMPIRICISM

Because of this appropriation and recombination of different materials and media, we can learn much about new ways to interact with environments. Participants invented new ways to interact with 'Star World's' unique environment which created alternative strategies to negotiate with their self-identities. The invention starts to be devised and manufacture of the object, or the experiment, begins with Figure 100.

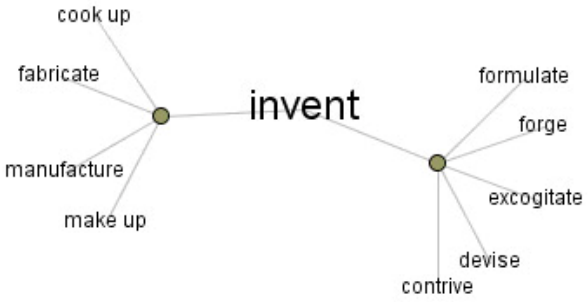


Figure 100 'Invent'

The idea, or the concept, arises from the gestation of a formula, or concept, germinating from a notion, heard or seen. Another life takes shape or form, created by building, or constructing an object, which delineates the line and manufacture of the piece, as seen in Figure 101.

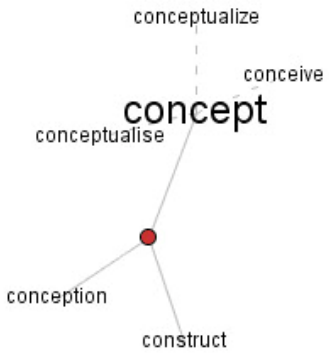


Figure 101 'Concept Construction'

Participants were inspired by conceptual shapes and textures to create self-blendings with their personal internal narratives; they constructed and described emotions and objects, for example, "chair", "leaves", "molecules" and felt "curious", "sleepy" and "relaxed".

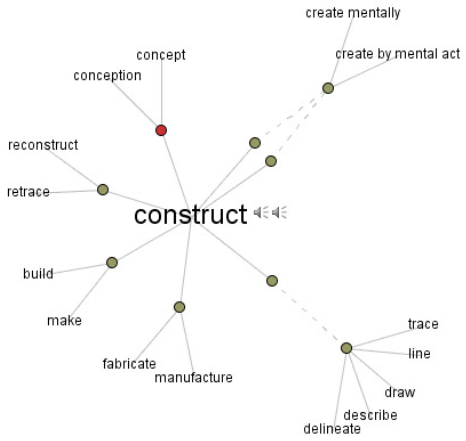


Figure 102 'Building Concept'

As the work continues, the investigation continues and new formulas appear as the fabrication of the object inspires new thoughts, as shown in Figures 102 and 103.

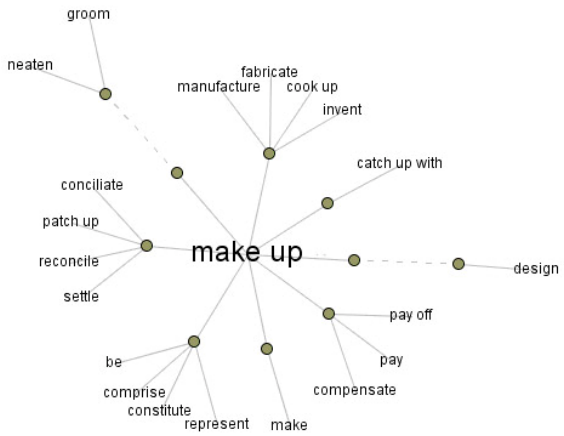


Figure 103 'Inspiration' method

After a series of investigations, the piece is neatened, settled and the pay-off is the finished design. The artist often juxtaposes and synthesizes different features of reality and different materials, so that, when completed, the work is greater than the sum of its parts.

8.5 Methods

In a simplistic illustration, while scientists demonstrate that A equals B, or that X is the same as Y, artists often choose signs, symbols and metaphors, to make a painterly image with a feature of experience. Sophisticated artistic methods and practices explore the interplay among intuitive art practice techniques, systematic thinking modes and related procedures. Why should 1 + 1 = 2, an artist would muse, why not A + 3 = Blue, or is π really 3.142…as scientists discovered when investigating this number? The artist can perhaps, reveal previously hidden relationships, as can the scientist. "When it becomes time to change a paradigm - to renounce one bedrock truth and adopt another - the artist and the scientist are most likely to be in the forefront" (Shlain, 2001). As Cezanne wrote, "[t]he technique of art comprises language and logic" (Kendall, 2004). This interaction between science and art is a powerful combination. Some artist colleagues only produce work using one particular method and medium of working, for example only creating work in watercolour, another in wood, yet another with plaster, but still they continue to explore the multi-fold possibilities of that medium.

Science and art produce products or methods, with substance, structure and process. This could be why many scientific and art theories need to be re-addressed and there is a huge field of Philosophy of Science addressing these issues. Looking beyond the realms of

possibilities and making different sets of logical connections, scientists and artists work with a creative process that has elements of both art and science investigation. This technique could also be employed by the computer-game industry; a concept is created and is broken down to a chronological timeline, in a series of creative processes, which are then translated into a logical process. This process makes the journey the important creation, with product as an added extra. Art is a journey and artists use various 'stuff' in their repertoire, appropriating and engaging with emotional thoughts and characteristics. This 'stuff' becomes integrated into a logical method, combining creative and scientific thinking. I argue that haute game rules set out the potential to look beyond the possibilities of the medium, as it now exists, to create new self-blendings with abstract shapes and forms, with unforeseen combinations.

8.6 ARTISTS SCIENTISTS AND PLAY

Playing the original game of 'Pong', I was interested in the way that a square-shaped black pixel could 'become' a representation of a round-shaped white tennis ball. This abstract representation of pixels was created by playing with software to question the limitations of the software and how to do more with it. A white, round tennis ball was replaced by a black square pixel that imbued all the characteristics of the opposite, because players gave the game their personal real-world self-schema of how balls would move through space. As more sophisticated graphics were produced, the textures and the possibilities of this artificially-created space became much greater, culminating in the real-world representation, in full 3D graphics, produced by games such as 'Half Life'. Why are games being produced re-creating real-world structures and scenarios? Why are different game environments not being created in formats other than the first imaginings of the creators? The creation of the environment, 'Star World', enabled experimentation with textures and created problems to solve, to produce an imperfect solution. There is always another object to try and the final texturing for the piece was only decided after much experimentation and judging of the way various elements interacted, aesthetically accessed via my subjective self-identity. One of the most interesting elements of virtual environments is its infinite potential to expand; there are no boundaries in cyber-space, and only the size of computer memory holds it in check. Art that is legitimised by critical discourse becomes embedded in the cultural and semiotic analysis of the structure and

texture of culture. The immense popularity of gaming is now introducing a similar type of critical discourse into an increasingly, aesthetically-aware population.

8.7 ENGAGEMENT

Did the 'Star World' piece, played and navigated as a conventional computer game, create a sense of engagement and reflectivity, security and narration, creating a deeper level of engagement and transmogrification within computer-game players, thus affecting deeper SIT, when navigating the environment? An investigation of SIT by appropriating gaming metaphors, design principles, or core technologies for alternative kinds of art-related content, creates abstract situations within a cyber-landscape, enabling alternative, seductive, non-threatening engagement with the user/player. The game's abstract shapes were not there to be dangerous, or to be used as cover from monsters, for example, they were meant to be ambiguous, allowing an entry into the piece by allowing the viewer to create their own dialogue and narrative with the piece. Table 21 illustrates surprises, movements, rewards and teach-back data, from participants.

TABLE 21 SURPRISES FOR STAR WORLD

Attractors	Connectors	Rewards	Teach-Back example
Sound/Glimpses of Objects	Plan is follow the sound/object	Activity is to waft through world (Local)	Wanted to switch thoughts off (Participant 4)
Goal is to engage in narrative	Use Glimpses of Objects/Animations	Reward is time to become engaged.	Colours calming, sound relaxing, quite enjoyed it (Participant 2)
Movement of opponent(s)	Plan is to become engaged	Become engaged	Helped me to relax and get rid of frustration (Participant 16)
Goal is to feel secure	Objective is to be safe	Reward is to be safe/secure	No urge to kill (Participant 19)

What benefits will this have for the player? Meditation, as a practice, has been used for centuries as a way to communicate with your deepest self, so could a meditative experience be combined and played in an interactive virtual environment, to enable a blending with a player's self and self-identity, thus fulfilling the rules of haute game production?

8.8 ABSTRACT CONCEPTS

When people view a piece of artwork on the wall of a gallery, or online on a monitor screen, or as a moving image, for example, in animation or computer game, they directly encounter imagery. Do they learn or 'experience' something, do they 'fall in love' with an element or elements which connects with their 'selves' that would enable an alternative blending with the imagery, perhaps in a meditative method? Kolb's (1984) model of four elements consists of concrete experience, observation and reflection, the formation of abstract concepts and testing in new situations and is illustrated in Figure 77. Artists and scientists have used this type of iterative method to gain knowledge and inspiration to apply to their work.

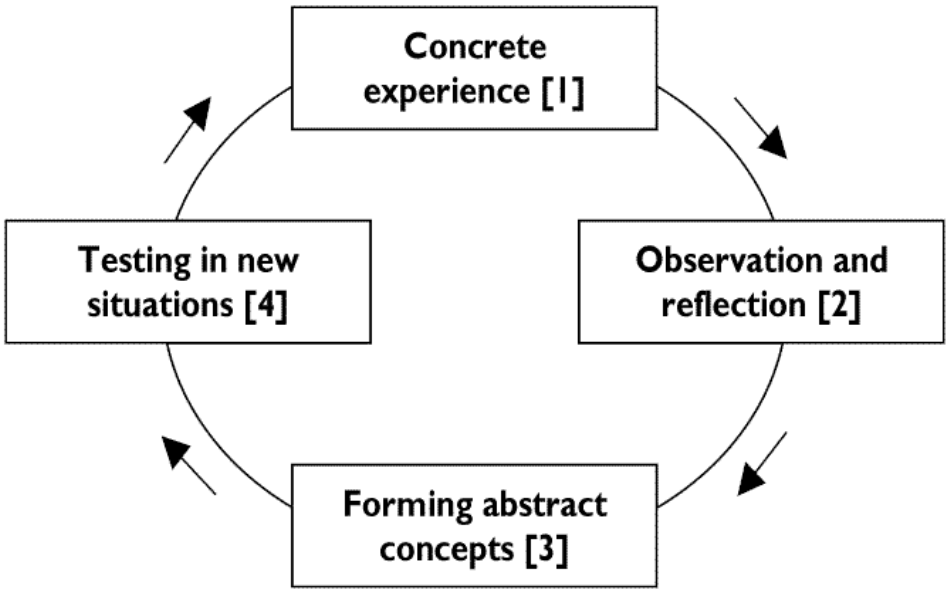


Figure 104 'Model of Four Elements' Kolb 1984

As a result of experiencing, reflecting, thinking, and acting, immediate or concrete experiences lead to observations and reflections. These reflections are then assimilated (absorbed and translated) into abstract concepts, with implications for action, which the person can actively engage with, enabling the creation of new experiences. This model is similar to Fencott's investigation of design methodology for virtual environments (2001) and the model I produced for the Women in Games conference in 2004, as shown in Figure 97.

8.9 DEVELOPMENT OF HAUTE GAMES

As discussed previously, games can be used to tap into different emotional states; utilising games to create alternative blendings can lead to a relaxing experience, which may develop optimal states of psychological well-being and consciousness (Walsh, 1983). Meditation refers to a family of techniques, which have traditionally been divided into concentrative and mindfulness techniques (Goleman, 1972). By tapping into our memories and experiencing pleasures in little things, for example, naming abstract shapes, creating a particular self-blending (as participants named shapes as shells, spaceships and whales) this blending of self and self-identity creates emotional responses that blended participants with the environment. This produces the possibility of many health benefits, for example, new evidence suggests that meditating can make parts of the cerebral cortex thicker and protect other parts from age-related thinning. Lazar scanned the brains of 20 people who meditated for 40 minutes per day. The researchers found that

specific areas of the cortex were thicker in the participants who meditated, when compared with controls. These areas included parts of the prefrontal cortex, involved in attention and sensory processing. Parts of the prefrontal cortex showed evidence of thinning, in the older control participants, but not in the older participants who meditated, thus, suggesting that meditation might offer protection from age-related neuronal loss. Jeremy Gray, co-author of the study, argues "[w]hat is most fascinating to me is the suggestion that meditation practice can change anyone's grey matter" (Lazar, et al., 2005). Although more medical research is needed on this subject, meditation and relaxation could be incorporated into a game environment, as the option of a 'chill out' area, giving computer-game players a chance to relax and offer an alternative blending to the intense mental processing involved in some game play. When navigating the 'Star World' environment, 23 out of the 28 participants mentioned, "relax" or "relaxation", 24 times, enough to be significant (as discussed in Chapter Six) and they agreed that a period of relaxation during the day would be a welcome addition.

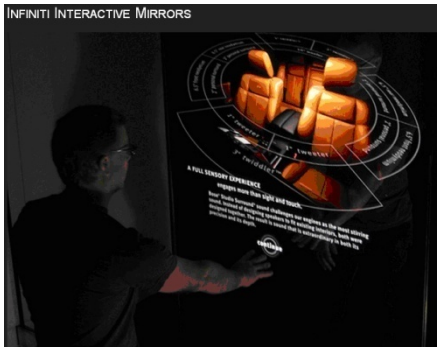
8.10 Alert and Relaxed versus Alert and Ready to Defend

As discussed in Chapter Two, immersants engaging with Char Davies's works 'Osmose' and 'Ephémère', recorded euphoric experiences, partly because of the way immersants engaged with the piece. Using a breathing apparatus as the interface, they were already conscious of their breathing. Focusing on breathing is one of the ways to begin to relax. Kasuki (2005), a Zen master, believes that, "to breathe is to listen to the stillness". "The interplay between a more active form of mental involvement and the more passive approach of meditation appears to have far-reaching ramifications for managing attention" (Kaplan, 2001). Biofeedback data from participants sitting, concentrating on their breathing, produced data that measured whether participants actually became relaxed. When viewing a film, or a piece of artwork that engages the viewer emotionally, something happens to the mind of the viewer that puts the viewer into that piece of work, engaging the whole person, consciously and unconsciously. As a result, the viewer forgets where they are and places a part of their self-identity actually into the scene, perhaps empathising with some of the maker's thoughts, ideas and emotions. What creates this connection? As in the case of the piece by Guanzhong, which I viewed and discussed in Chapter Two, a piece of artwork that connects with the viewer is triggered by connection and meaning to the viewer, engaging the emotions "in a meaningful

self-directed dance of the eyes, but also a meaningful dance of this emotional explicating process. Art plays with this looking-for, using it to make us engage in different afforded actions that relate to different limbic (emotional) categories" (Ellis, 1999).

8.11 TRANSFORMING GAMES

A female game player, playing as a male, for example, in the computer game, 'Fable' (Lionhead Studios, 2006), can be cruel to 'her' wife, thus, changing her male character into the dark side of morality, as it exists in the game. If playing games can affect a player's emotional state, why not create a computer game to help the player to affect their emotions in a positive way? Why make a game feel real? Why not create a more visual and rich, infinite format that is different from real life. Turkle (2005) writes, "[w]e shall see the computer as partner in a great diversity of relationships, everyone will have the opportunity to interact with them in ways where the machine can act as a projection of part of the self, a mirror of the mind". Participant teach-back data revealed part of their self-identities and how they were present in the environment; "I was curious to see further…I saw jewels…spangles and spaceships changed colour". There was no attempt to re-create jewels, spangles, or spaceships in the environment; the participants themselves without any prompting, name the abstract objects. Painting once described the world of representation, from which photography subsequently freed it. Video, consequently, freed photography; net art freed artists and gave them the chance to circumvent the gallery and museum system. What will and can games do? I argue that games lend themselves to generating emotional input from players' self and self-identities, creating a comfort-blanket from reality. "It is time to feed the imagination; there is room for different types of format, creating magic in a way other genres are unable to do so" (Pratchett, 2005). Possible methods of producing immersive experiences allow the investigation of new technologies and the analysis of developers, working in new creative ways of viewing interactive technologies. The Infiniti division, of Nissan North America, created a "[u]nique and fascinating interactive experience, engaging consumers at larger-than-life size and immersing them in the presentation". Working with a team of artists, the interactive mirror (Infiniti Division, 2006) used interaction and immersion, to create a more emotionally-rich experience, to advertise a new car design. Shown in Figure 105, viewers standing in front of the mirrors had the unusual sensation of seeing their reflection and the projected content, simultaneously.



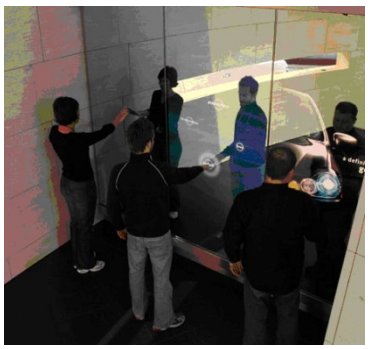


Figure 105 Interactive Mirrors in Action

Viewers became transformed into a part of the installation, by seeing themselves reflected in the glass; breaking the 'fourth wall' allowed users to navigate content, without ever needing to touch the 'screen' or press a 'button', by using sensors. This created a unique spatial experience, where the content appears, organically, before the viewer. This installation created new transformation and blending opportunities, so how else can science and art work together to transform games?

8.12 FUNDAMENTAL PHYSICS: SCIENCE AND ART

Artists and scientists often need to produce artworks together, combining their individual expertise in the creative process. Previous research has focused on how artists and technologists can collaborate productively (Candy & Edmonds, 2002). The core problem is that of overcoming the specialised language found within the artists' and scientists' disciplines. It has been observed that successful collaborations seem to arise when artists are able to use and communicate via the technology (see Appendix VII:J). When working together, with scientists and technology, artists can push beyond the circumscribed solutions offered by many applications and begin to work with the technology, in such a way that it approaches their notions of 'truth to materials'. "Artists working in this way often also have insights into the implications of using technology and software in particular ways - often ways that have never been thought of by the developers. This then becomes a source of dialogue and the means to develop a common agenda and goal between collaborators" (Oates & Parker, 2005). Artists and game designers produce unexpected happenings, which tap into unexplored regions. Games can be set in space, or underground, or in a fantasy environment structure. Artists collaborate with people from many different fields. An example of this was an exhibition that was the result of collaboration with the Ogden Centre for Fundamental Physics, based in Durham University. The Department of Fundamental Physics is interested in

understanding the smallest scale of the world of elementary particles; these are very small, basic constituents of nature. What are their properties and how do they interact? "Something unknown is doing we don't know what" (Eddington, 1927). The other department, Computational Cosmology, asks questions about the biggest scale that humans can address; the scale of the universe as a whole. How did it begin - how did it come to be the way it is? The physicists are beginning to understand that the way the universe looks as it does is because of phenomena at a small scale - a very small scale - smaller than an atom; they realise that there is a connection between the world of the very small and the world of the very large. The Milky Way, constructed of 100,000 million stars, began life as small subatomic particle irregularities, imprinted by cosmic processes. What is the connection between art and physics, besides the obvious connection, the artworks having titles like, 'dark matter', 'particles', 'galaxies', 'space and time' and my own piece of work, 'Star World', shown being navigated in Figure 106.

Figure 106 'Star World' Navigation at 'edan at Ogden' exhibition

This exhibition took place because of the link between art and science that has always existed; edan (2007) artists were told, by Dr Peter Edwards, about the creation of the universe; he also talked about the work of the Ogden Centre. We, the artists, were encouraged to create work, based on and inspired by the world of particle physics. A profound and emotional connection to a piece of work hanging outside the office of one of the physicists, was an interpretation, by the artist Graham Head, of a poem by Rebecca Elsen, an eminent astronomer and also an accomplished poet, who he knew very well, but the connections go much deeper. This artwork was her poetry, printed on large sheets of different coloured Perspex, which was made into a book, but hung as individual pages for the exhibition.

At the exhibition, it was said that, "[f]undamental physics and art both have a special relationship with aesthetics by the fact that artists are nearly always producing aesthetically beautiful pieces to look at" (Frenk, 2006). In trying to create art, sometimes

artists are also trying to produce something that is beautiful, even if, in addition, it stimulates the viewer to think about something else. Frenk continued, "[m]ost physicists have a relationship with aesthetics but in a more subtle way, we used to think that if we knew one, we knew two, because one and one are two. We are finding that we must learn a great deal more about 'and'". Einstein (1879-1955) argues, "[t]he most beautiful thing we can experience is the mysterious. It is the source of all true art and science". Wu Guanzhong (b1919) published essays, titled, "The Beauty in Form in Paintings" and "About Abstract Beauty", which started a five-year discussion on abstract beauty and the relationship between content and form, leading to a liberalization of art ideas in the 1980s. He writes, "[i]n retrospect, viewing from the angle of images and mode of expression in the beginning, I devoted myself to exploring the beauty of mode, and tried to create an unusual ambience purely in artistic forms". Artists and scientists are trying to uncover their own little slice of the truth; in science, the truth is external and belongs to the whole world. In artists, this is expressed internally, through the individual, but is not less valid.

It was not the first exhibition to be held in the building, but, for this exhibition, the building was completely transformed by this cavalcade of artists coming along. It was said, at the opening that "[p]hysicists would never notice if the walls were painted red or even taken away but they have been affected by what has been happening in the last few days, everyone has had an opinion of the works on display some people love them some people hate them, but nobody remains unmoved; there is a buzz around the place and we have all related to the wonderful art on display" (Frenk, 2006). The centre had already transformed another waste area when working with the artist, John Robinson (1996). Figure 107 illustrates the garden that he designed, which was created with a physics symbol, used as a basis to showcase his sculpture 'Journey'.

Figure 107 'Journey' Sculpture and garden design by John Robinson1996

8.13 TRANSFORMATION OF SPACE SELF-IDENTITY 'GREIG GALLERY'

The process of investigation into how art and practice can transform and change the self-identity of individuals or even a building, was the curation and inauguration of a new art space, in the Greig building, subsequently named the 'Greig Gallery', part of which is shown in Figure 108. This was previously a dark corridor, which no one noticed when navigating, but it was transformed into a different space when the Greig Gallery was installed. These dark spaces and unused areas were transformed, creating alternative self-identities. Adams (2005) observed; "[w]hat is important is that this space is here, available to be a place where people can gather to experience, to analyze, and to debate the nature and merits of video game art, and I believe that is beneficial to the game industry, industry, to students and teachers, and to society at large".

Figure 108 Greig Gallery (Work shown is by artist Don Carson)

At the moment, there exists no substantial set of curatorial, art historical, critical or economic practices that function to legitimate what is happening in the computer-game world. This gallery is at the forefront of beginning to make that change. Immersion in the space, looking at imagery in real-time space, could become a similar action-reaction in game-spaces, due to new technologies and new ways of looking at projection of images. Standing still, or walking around and viewing the piece, in real space, invites a surrender of the self, giving control to subconscious reaction for as long as the viewer allows.

8.14 CREATING A FAVOURABLE ENVIRONMENT

Viewing a motion picture on a large screen is different from watching it on a small screen. Artists are encouraged to produce large-scale canvases, for example 5' x 6' pieces of work, or on even bigger scales, as this gives more impact and fills the eye of the viewer, creating a blending of elements, filling the eye's peripheral vision. The possibilities of projection are coming closer to people's consumption; projection TVs are now being seen in the home, placing TV imagery onto a large wall space, creating possibilities of deeper immersion, blendings and a greater loss of self and self-identity. What if there is another way to suspend disbelief and initiate self-identity transference (SIT), in a mediated environment, such as, when a viewer can fully engage with a stage play, traversing that 'strange space' to access your identity and 'become' that character, fully believing that you are the character by using large-scale projections? In suspending belief, what types of abstraction are used and how are they created? Guiding people to alternative forms of interaction and immersion with game environments, as done by 'Star World', introduced participants to creating new types of aesthetic appreciation. This was a specific form of temptation; an inducement to persuade someone to change their behaviour, to meet the desires of the seducer. Seduction can also be viewed as a form of power that relies on psychological mastery, rather than the use of coercive power, money, or intellectual appeals. Seduction and relaxation helped to blend participant's self and self-identity, when navigating 'Star World'.

Another form of relaxation is meditation, sometimes described as, "listening to the silence between thoughts". Allowing computer-game players to engage with this silence, or 'strange space', produces opportunities that allow the player time to blend with the space and, as participant 2 commented, "[j]ust sitting there watching was very relaxing". Artificial environments that can be viewed within your own home space are becoming more and more attractive a proposition to invest in, but what are we going to do with these large projection spaces? In the movie, 'Total Recall' (1990), Arnold Schwarzenegger's character was watching TV news on a whole wall of imagery. In a recent development, new ways of projecting images into our homes are now coming on the market, including full-wall projections and, in the next few years, we could not only just watch these projections, but, also, with the possibility of 3D projection, achieve a deeper immersion into both game and TV environments. There is a TV that projects 3D

objects into real space, in front of the viewer and another system being tested is 'Surround Video', as shown in Figure 109.

Figure 109 Surround Video Projections Mines 2008

Fully immersive virtual worlds may make it easy to disconnect ourselves from what we have, traditionally, called 'reality'. More (1997) wrote; "[w]hether that amounts to a disconnection of sensory and perceptual contact with reality or the addition of new layers of reality depends on what kind of virtual worlds we choose to construct and inhabit". Will this disconnection activate when accessing Surround Video, or create an alternative layer of reality? (Reynolds, 2008).

Haute games bring an extra-dimension to game playing, allowing players extra possibilities of interaction. I suggest haute game rules are the beginning of a way to design and guide computer-game developers towards experimentation possibilities in virtual-environments.

SUMMARY CHAPTER EIGHT

This chapter presented rules for guidance in the classification of haute games, which had been formulated by questions posed in the introduction to the thesis. These rules were generated by both quantitative and qualitative research and the empirical studies contained within this thesis. It argued that these rules are important to the field of game studies as an evaluation method and to assess the value of innovative computer games. These rules are also useful as a method of assessing extra potentialities of experimentation and interaction with cognitive processes, when engaging with a computer game. Cyclical methods of engagement models were illustrated and discussed and the importance of artistic practice, as a method of evaluation and iterative feedback, was discussed as a valuable tool that demonstrated alternative strategies for employing available software.

Methods of incorporating artistic practice were suggested, which could enrich the benefit of innovative opportunities afforded by computer games to broaden the field of game studies. The value of alternative emotional interaction and techniques were demonstrated that would entice a player to identify with their personal self-identity, leaving a player changed, even enriched. The importance of altering a spaces' identity and how the introduction of art into that space can change the identity of spaces that would provide affirmative outcomes and new, interactive-blending possibilities was examined. Health benefits and emotional needs were also discussed that can be addressed in a game environment were also discussed. It was revealed that art and science, combined, can point the way to new types of engagement, which allow the blending of alternative self-identities with abstract shapes, using, as its example, shapes embedded within 'Star World's' environment. It demonstrated the narrative, interactive and blending opportunities that computer games lend themselves to, when generating emotional responses from players' self and self-identities and offered suggestions of innovative methods of creating spaces within our homes in which to play games, as a way to improve our stressful lives. It discussed the implications of using technology and software, in particular, as a meditative space, using image walls and large-scale projections that could, in the future, intermingle with abstraction and computer-game design, to produce artistic environments that change the whole space, activating new ways of looking and seeing, for viewers of these artworks and players of computer games.

The haute game rules created, signified that designers and players have the opportunity to experiment with alternative ways of blending self and self-identity.

CHAPTER NINE:
CONCLUSIONS AND FUTURE WORK

9 OVERVIEW

This chapter lists the research questions, contained within this thesis, under the headings of each research question. A combination of game studies, art practice and empirical research, reported in this thesis, has addressed each of these research questions and this chapter reports on the conclusions generated by these questions. It locates this author's contribution to knowledge, discusses the limitations of the study and advises on what future research can be drawn from this research.

9.1 INTRODUCTION

The research reported in this thesis has investigated the use of abstraction and ambiguity, to study participants' presence in a computer-game environment. This environment was designed by the author, who brought into play, art practice methods to create the environment that provoked the creation of abstract artefacts. The investigations demonstrated that a VE, such as 'Star World', can cause specific responses in each participant, which generate a personal self-blending, creating a unique interaction with each personal navigation.

9.2 SUMMARY OF MAIN FINDINGS

Chapter One introduced the field of research, research question and ancillary questions that arose from the main research and were investigated in this thesis; it introduced the framework from which this thesis acquired its inspiration. Chapter Two presented and conducted a literature review. This examined how self and self-identity was constructed and accessed, which made a contribution to the field of psychology, by the defining of self and self-identity as a jigsaw puzzle, where pieces connect and combine to create 'multi-modal' connections with participants' self and self-identities. Chapter Three conducted the first empirical investigation that examined participants' reaction to classifying imagery, using their personal interpretations. Participants' personal, internal, self-identity memories and dialogue created the classifications for the piles that the images were arranged in. This resulted in two cluster groups being identified and personal objects in the images, put there by the artists to identify their sense of 'Just who you think you are?' were realised to be unimportant to participants identifying these self-portraits. This identified the issue of whether these objects were important to the construction of self-portraits and raised the question of how a virtual environment,

composed mainly of abstract artefacts, would interact with participants' self and self-identity, when navigating a VE. An environment was prepared to test the research questions identified in Chapter One, which was documented in Chapter Four, which examined and discussed artistic practices engaged that built 'Star World' virtual environment. Chapters Five and Six, investigated and described the responses of participants to two experiments. The first exercise tested participant responses to the navigation of a VE and the second, tested relaxation. In total, two separate empirical investigations were conducted, which employed a combination of both quantitative and qualitative research techniques. The environment, 'Star World', was shown at several art exhibitions; feedback from participants' navigation of the piece informed and was the inspiration for, the empirical research conducted in Chapters Five and Six. Using data from questionnaires, physiological measurements and teach-back transcripts, participants' responses to both of the experiments were collated. The results of both experiments were reported, discussed and conclusions drawn. These were discussed in Chapter Six. Chapters Seven and Eight investigated further models of abstraction, ambiguity and abstract patterning, both in the artistic and scientific communities. The blending of different fields and research methods made it possible to corroborate results from different investigations and arrive at forward-thinking perspectives relevant to the field of game studies, art practice and empirical research.

9.3 CONTRIBUTION TO KNOWLEDGE

How can aspects of modern computer games affect emotional responses from players? Could these responses be affected by blending aesthetic concerns that create alternative cognitive processes to induce alternative mood-states, particularly relaxation?

This research question was the main focus of the body of research encapsulated in this thesis. The contribution to knowledge this thesis made, of which the haute-game rules were an addition, blended together fine art practice and science practice; selected empirical research methods were used that created a fusion, or 'blending' with participant-players. This created a method to combine and allow alternative cognitive processes to engage with 'strange spaces'. These responses intersect in the 'strange space'. These responses were all individual and personal to the participant; individual navigation generated individual connections, building a bridge across the 'strange space' to participants' self and self-identities. In his keynote speech Clayton (2004), talked

about Shintaido, a modern art form, created from a fusion of Eastern martial arts, Western arts and philosophy. Drawing from Western and Eastern theories and influences, 'Star World' created an environment that encouraged an alternative type of relationship, where participants were encouraged to create positive cognitive responses, moving and shifting participant-players' perspectives. Chapter Six, in particular, highlighted teach back responses, plus alternative aesthetic responses that created, within participants, a method to access cognitive processes, hitherto unexplored by computer-game developers. A number of features were identified in participants' teach-back protocols that could be highly desirable in improving the interactivity and immersive potential of computer-game environments and may prove to be invaluable for game scholars. These features could include built-in 'chill out' times, built-in 'chill out' areas, games for alternative interaction and games that access other areas of a player's self-identity. These results are an important contribution to the field of game studies and add to the knowledge of physiological process. Artists and scientists respond to information, which interacts with self, subjectively and objectively, but artists can and do use quantitative and qualitative research, as shown in this thesis. Perhaps the evolution of mind and the transformation of the self require a breaking free of clinging and 'this-that' thinking, to create new connections, in this assembly of nerve cells that we name, 'self' and 'self-identity'. Van der Rhone (1886-1969) argues, "[w]e can't plan cities out of the blue sky because of the problem of the idea in relation to the objective fact - gravity and the function of it does not enable the creation of any structure that defies gravity". No gravity exists, however, in cyberspace; anything can be created there; the only limitation is one's imagination. Just because gravity exists in the real world, does not mean it that it has to exist in a game space. One of the reasons for constructing 'Star World' was to give the player the option of defying gravity. The first requirement of artwork in a computer game is, mostly to serve the game-play; it does not need to be sophisticated. Teach-back data reported that participants enjoyed the feeling of being able to 'fly' in the world. Games entertain many players and each player brings their own self and self-identity to a game. Graphics played an important part in creating the player's experience of a fantasy world. The process of game-play does not always lend itself to aesthetic experience; often there is no time to admire the landscape, or surroundings, but it is easy to forget that computer games are a creative medium. Interaction with abstraction afforded the allowance of interactive blending that allowed participants to engage with personal schema. Two theories are said to be incommensurable, if there is no common theoretical language that can be used to

compare them. In science and art, there are similarities; creative people can take an active part and become a powerful force in society, taking action, inspiring thought and effecting change, by offering ways to re-image the present and future. Artists are using software as another material in their artistic repertoire, defining structures to define process, each language becoming unique and constraining, or allowing flexibility. Using abstraction to create agency can be included in the design of game-play, crossing, accessing and blending with that 'strange space', slowing time down and allowing cognitive processes that engage with enigmatic symbolism and personal time spaces. "By changing space, by leaving the space of one's usual sensibilities, one enters into communication with a space that is psychically innovating. For we do not change place, we change our nature" (Bachelard, 1964).

9.3.1 RESEARCH SUB QUESTION 1

Would omitting an avatar enable a player to become relaxed and immersed, enabling the player to blend with the environment, using abstract artefacts to support and invoke a relaxing experience?

This research question, which was posed after noting participant interaction, when viewing images of self-portraits in Chapter Three, gave a better understanding of how people behave in specific situations, while teach back data, presented in this thesis, demonstrated how participants interacted and named abstract artefacts, as reported in Chapters Three and Six. Once researchers and designers know how and why that happens, they can begin to speculate what will happen in the future. This is important in all areas, but is particularly pertinent to the field of game studies. The computer game industry is at a similar stage as word-processing software was, when introduced to communities. There was a lot to learn for people who had not used computers previously, but familiarity with the product produced a stasis of learning. This stasis is now being broken by the introduction of creative learning, as was demonstrated when an artist introduced artistic software into communities, as described in Chapter Three. Stasis of game development happens when computer-game companies reproduce the same game in the next generation format, for example, from Playstation2 to Playstation3. These games upgrade the graphics and physics of game play, but have not introduced new types of games and types of interaction. Proof of alternative interaction, as described in this thesis and the possibility of creating new and alternative self-blendings, encourage more

experimentation within the games industry, allowing game designers to be more innovative in their game and level designs.

As discussed in Chapter Two, there are many theories about self and self-identity, but there is no definitive 'self' yet identified. The consequences of a 'self' projected into a VE raised interesting emotional responses, results of which were investigated in Chapters Five and Six. The teach-back results have implications for future game design, advantages of which would be the positive self-blending of participants' self and projection of participants' self-identity into and through the 'strange space' that connects them to an unreal world, as shown in Chapter One, Figure 1.

What the computer-game industry needs to realise, is that people are diverse and want different types of products. This is why game studies are important, to continue the academic investigation, development and involvement of research. Some people may purchase a landscape painting; other people may purchase 'World of Warcraft'. Some people may buy abstract art and other people may buy 'Barbie's Horse Adventures', yet there are other people who do not want to participate in current fashions, in both art and game culture. The Wii has already changed a lot of people's expectations of game play and has taken many in the game industry by surprise. People, such as female players and older computer-game players, are buying the Wii. These people that the games industry has previously not reached, successfully, are now becoming computer-game players. The playing of these games introduces the possibility that they will reach a more diverse audience and enables the introduction of different game genres. When questioned by computer-game developers, after showing 'Star World' at the Women in Game conference, in Dundee, it was clear that developers were interested in the idea of a computer game, purely, to relax, using alternative aesthetic blendings. They needed to know that people did want this product, before implementing costly production. Haute games could have alternative identities, both as computer games and as empirical test-beds. With games and game-players changing in style, method of play and age groups, alternative haute games have the real possibility of being introduced into the game play arena. Artists making and building new 'haute game' blends and creating new opportunities of play, can affect game genres produced through their unique combination-blending, creating new ways to blend players with virtual environments.

9.3.2 RESEARCH SUB QUESTION 2

Could artistic and empirical models of practice be used to formulate and introduce diverse aesthetics into a computer environment?

As described in Chapter Four, artistic practice was utilised and integrated into the production of the virtual environment, 'Star World'. This was created by accessing my personal self-dialogue, which visualised and externalised my 'self' and self-identity memories, to create this personal vision. I had previously produced a 3D environment, consisting of an art-gallery space, to show work in. Shown in this illustration, the top image is the entrance space, which is textured with water, because, in cyberspace, "[y]ou can walk on water".

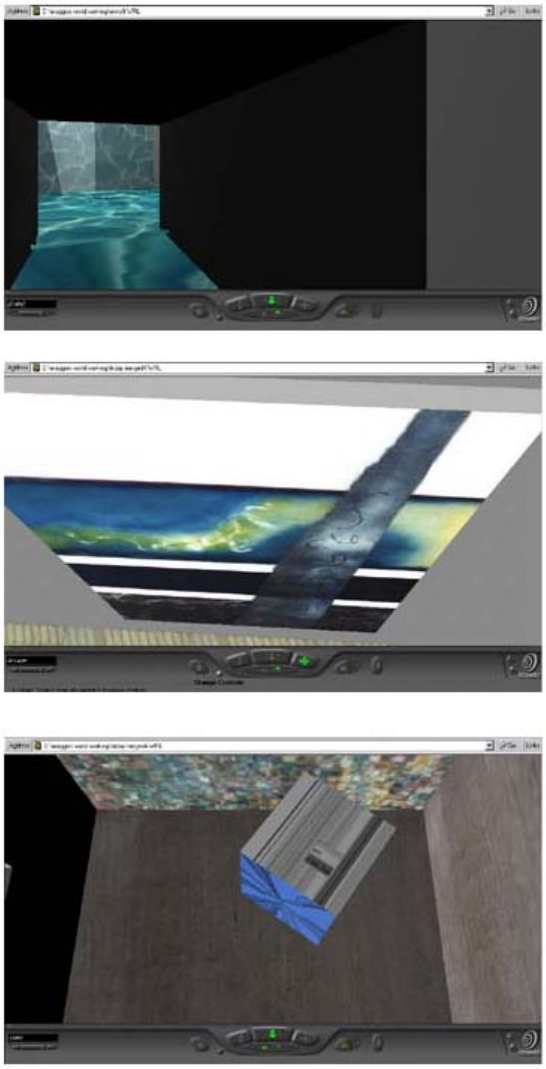


Figure 110 'Art Gallery' Maggie Parker © 2001

The foundation image is a piece of work, shown in Figure 110, floating and spinning in the air, because, in cyberspace impossible events become possible. Creating and facilitating that original space, was the beginning of the realisation that these VEs could be used to create alternative aesthetic and cognitive interaction with virtual 'strange space'.

The 'Star World' environment was manufactured with an alternative dual purpose in mind. The first purpose was that of creating somewhere that would be relaxing, stress-free and seductive, which would invite the participant to navigate, in a safe and secure virtual environment. The second purpose was to enable experimentation with the software and to use alternative texturing, which was achieved, for example, by texturing the 'sky dome' with handmade paper, instead of traditional clouds, etc. Artists construct meaning in representational systems, based on considerable experience with the relevance of image and perception. Perhaps an artist will design a new way to interact with games, making a game controller that is simple, but effective to use. This power lies within artists, which is ever increasing, as the image acquires new currency in mass culture. Artists and scientists, working in developing technologies, are re-negotiating their positions through constantly re-worked aesthetic strategies that relate to the art world, scientific world and beyond. Physicists hypothesise what role gravity had in the creation of the universe (Edwards, 2008); game-designers create real-world physics reactions, when driving cars through virtual space (Rock Star Games, 1998), while linguists "survey mountains of knowledge showing that most of our cognition and meaning making goes on well below the level of conscious awareness" (Johnson, 2008). By creating artistic works, artists create tensions between differing fields, crossing and blending boundaries in 'strange spaces', creating blendings between science and art, self and self-identity. These blendings create new 'strange spaces', in addition to narrative and emotional opportunities. As described in this thesis, by combining art and empiricism, the model/world created became both an empirical, investigative tool and a piece of art to be enjoyed - or not - without any empirical imperative, available for participants to create personal interactivity and narrative. Future work, combining artistic and empirical methodology, will require further experimental abstract game worlds to be built, using 3D software modelling tools. If more artists experiment with software, who knows what can be created and achieved? When viewing Hieronymus Bosch's triptych, 'The Garden of Earthly Delights' (1504), in particular, the left panel, 'The Earthly Paradise (Garden of

Eden)', sometimes known as, 'The Joining of Adam and Eve', shown in Figure 111, it can clearly be seen that Bosch has preceded Charles Darwin's 'Theory of Evolution' by 300 years, when he portrays creatures and animals arising and emerging from a primordial pool.

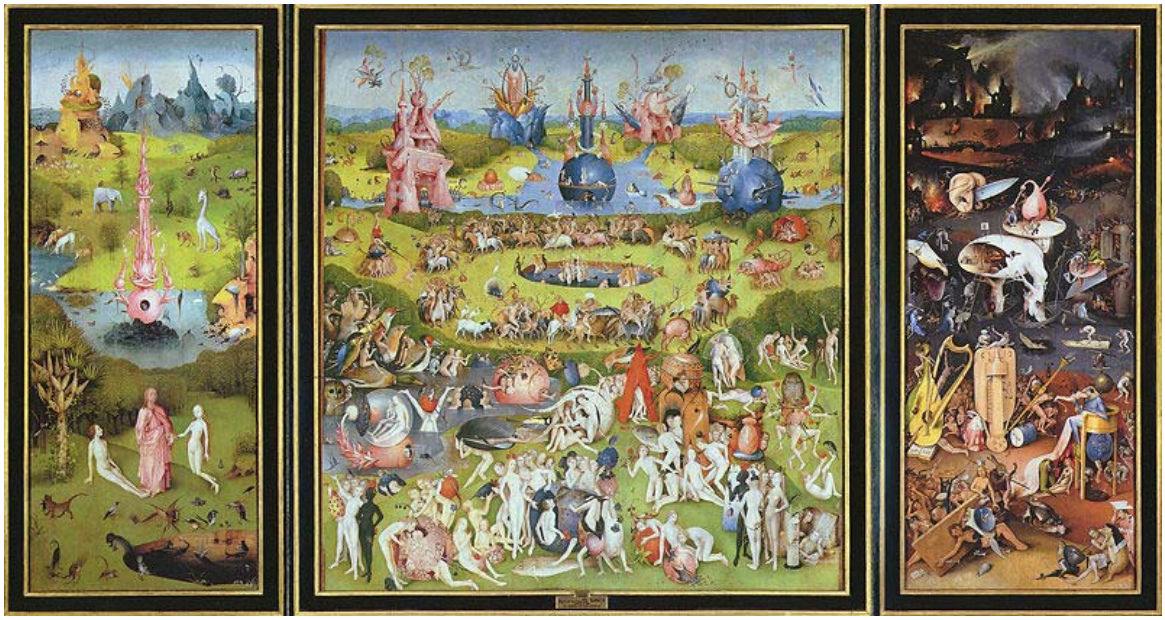


Figure 111 'The Garden of Earthly Delights' Hieronymus Bosch 1504

Artists are essential to progress, in producing games that exceed current thinking and boundaries. As Bosch exceeded the scientific constraints of the day, artists can participate in the cycle of research, invention and development in many ways, by becoming researchers and inventors, themselves, exploring and extending the principles and technologies, in unanticipated ways. The construction of 'Star World' created innovative opportunities of interaction and blending. Participants become blended with the environment, using self-reference and personal narrative, because of the aesthetic opportunities afforded by abstract texturing and placing objects in spaces not capable of being created in the 'real world'. In the creation of this environment, I had to invent new ways of working with software, to introduce these aesthetics, for example, texturing the internal animating globe with handmade paper, instead of a conventional sky-cloud texture. These alternative aesthetics produced alternative blendings, inspiring the creation of mental spaces, which create exploration challenges. These challenges stimulate and excite game-designers, who can utilise the unique building possibilities to create new interactive blendings, creating deeper immersion with game-play.

9.3.3 RESEARCH SUB QUESTION 3

Could an artist-created environment, 'Star World', have alternative identities, as both an art piece and as an empirical test-bed, to measure participants' emotional and narrative interaction with their self and self-identity?

As an experiment into what 3D software could create, 'Star World' transformed and 'morphed' into a dual-purpose environment. This dual identity was as an art piece, exhibited at several art exhibitions and shows, which included being projected on a ceiling and shown in alternative art spaces, such as the Department for Fundamental Physics in Durham University, as described in Chapter Eight. The other identity was as an empirical test-bed, as reported in Chapters Five and Six. 'Star World' produced responses from viewers who came to see artwork; reported in Chapter Four, Table 8. These responses were the inspiration from which empirical experiments were devised. Artists and scientists can both respond to insight and intuition, in order to formulate hypotheses and design experiments, but should never be seduced by 'common sense'. It would seem that careful designing of computer-game environments, combining art and science practice, is imperative, to create alternative designs, which take advantage of software tools, to create innovative and diverse game experiences. From an art perspective, it would seem that current design methods constrain what can actually be achieved in a virtual playscape space, but the environment, 'Star World', provides evidence that abstract objects can be used in a computer-game scenario, which would improve players' interaction and support a diverse range of alternative game genres.

9.4 LIMITATIONS OF THE STUDY

In this study, the main limitation was the lack of time to build more environments for future experimentation and implementation. Several other environments were designed and modelled in 3D, as described in Chapter Four, for example, the 'Indian World' environment, illustrated in Figure 49. A forest environment, water environment, and a mountain environment also exist. Although the first stages of each landscape were designed, they were not implemented and published as stand-alone, navigable environments. These environments are not yet published at the time of writing, therefore, are not illustrated in this thesis. Publishing these environments, to make a playable game,

would be an important post-doctorate to pursue; further investigation would build on contributions revealed in this thesis and expand the scope of art and science practice.

9.4.1 DESIGN FOR EXPERIMENTATION

The results of the analysis supported a positive association between participants' interaction with 'Star World' and the possibilities of environments and genres of computer games built, purely, to induce relaxation; further designs are waiting to be implemented, which would test these interactions. It is important that any future research expands the scope of this study to include alternative designs, which draw on art practice methods, as shown by the example of texturing the sky-dome of 'Star World' with handmade paper instead of a traditional sky, sun and cloud texture. Participant responses to this alternative texturing proved that this method could be used to create perceptual opportunities.

9.4.2 PHYSIOLOGICAL MEASURES

A second limitation identified was that it was not possible to perform testing by measuring brain wave activity. Participants could perform the navigation exercise, while using electrodes attached to the scalp, which would produce electrical readings from the brain. An initial test worked well; this was tested by taping electrodes to the scalp of a male, bald, participant, but when tested on 2 female participants, it proved unsuccessful, because the hair on participants' scalps prevented the sticky pads from attaching securely.

9.4.3 SOUND POSSIBILITIES

As discussed in Chapter Four, sound was not tested to its full capabilities. Proprietary software highlighted limitations in initiating the full range of sounds. Wind on a Welsh hillside was the only individual global sound able to be heard by participants. A study was performed in Hong Kong, to test the effect that self-selected music had on relaxing pre-procedure anxiety in Chinese day-patients. This study suggested that providing self-selected music, in the pre-procedure period, assisted in the reduction of physiological arousal and anxiety (Lee, et al., 2004). This provides justification for further research opportunities, to evaluate the viability of integrating music for future use in a relaxing game environment, for example, providing bird-song, or if the game player wishes, other sounds suitable for them. Sound interaction added to a relaxing environment, may assist

in the reduction of physiological arousal. In the future, it would be interesting, to perform the navigation exercise, using 'Star World', with sound turned on, in one session, then turned off in another session, to evaluate the impact of using sound in an environment.

9.5 FUTURE RESEARCH

Games put you in their world; they do not tell players how to speak, or what to blend with the players' self and self-identity, but they can hint and give visual clues. Development tools may grow simple enough that game creation becomes a more personal affair, causing more games to be produced with only the intention of the maker-user player and the breadth of the game market will grow. When using the haute-game rules as guidelines, perhaps new-media artists and game-designers will produce differing genres of computer games and create further alternative games. Developing greater space for independent or creator-controlled game projects will bring about greater innovation, expression and diversity, Engineers, for example, have developed a type of fabric that knows where and how it is being touched. The 'smart' fabric, shown in Figure 112, has tiny electrodes woven into its pattern, which indicate when it is pressed, pulled or bent. Electronic controls, such as the 'play', or 'stop' buttons on an MP3 player, or mobile phone, which were previously made of metal or plastic, can now be made of fabric and stitched into a jacket.

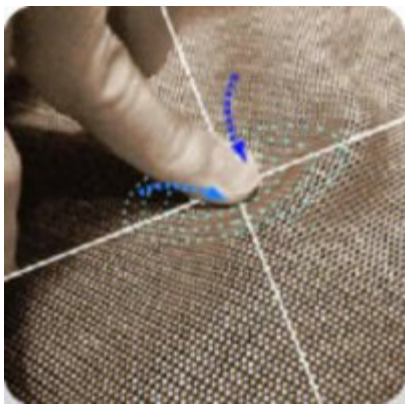


Figure 112 'Smart Fabric'

Figure 113 Fabric keyboard

A further example is a fabric keyboard. Most hand-held mini-computers, or PDAs, have tiny keyboards that are too small to type on. A fabric keyboard, as shown in Figure 113, has been manufactured. This rolls flat and works like a normal keyboard, then its user can fold it away when they have finished using it. This raises all kinds of interesting possibilities for making game controllers of different materials. These could be

incorporated into innovative methods of creating alternative navigation possibilities. Why not make a soft toy, for example, a teddy bear, or even a cushion? To illustrate navigation possibilities, when using this type of controller, conceivably stroking the back of the soft toy may create a calming influence on game-players. This type of controller would have been much better to use, when navigating the 'Star World' environment, because the environment was meant to have the opposite effect from being in a constantly alert and ready-to-defend state.

9.5.1 HAUTE GAMES

One segment of this investigation has highlighted participants' lack of time for relaxation. People are constantly thinking ahead and planning what to do next, in their daily routine. When playing an intensive computer game, or working in a busy office, people are navigating through their busy lives. These periods of mental intensity could be balanced with recuperative periods. Navigating 'Star World' forced participants to become 'present in the moment'. Accessing their personal memories, to make sense of the abstract objects they were viewing, forced them to concentrate and not become distracted by other tasks. Kant (1790) argues "[s]pirit is present when a work prompts the viewer's imagination to spread over a multitude of kindred presentations" and this can "express ideas through the play of imagination". 'Star World' became something else, which connected with participants' self and self-identities, furnishing them with the incentive to make connections with the environment, in a "whole host of kindred representations that provoke more thought than admits of expression in a concept determined by words". The objects and textures implemented memories, which became substitutes for participants' selves, "animating the mind by opening out for it a prospect into a field of kindred representations stretching beyond its ken". This multiplicity of representations allowed concepts to be "supplemented by thought and the feeling of which quickens the cognitive faculties" (Kearney, Rasmussen, 2001). Computer-game environments could be used to navigate isolated beaches, a beautiful mountain scene, or even a forest scene, but games can create anything the author can imagine. "Games are emerging as the dominant form of art, expression and culture of the 21st century. There is no doubt in our minds that the industry will benefit from a more diverse pool of talented creators" (Game Developer Demographics, 2005). The early Impressionists would have understood the need for an alternative exploration of the computer game medium, from Japanese painting, with its

characteristic Sumi-e brushwork and its 'first stroke right - no going back' limitation. Then, there was the translation of this freehand skill into the stubborn resistance of the wood block. So that the fine lines on the key blocks would stand up, in relief, to take the printer's ink, the incising had to be made, carefully, around and up to the lines. The adaptation from one form to another presented special problems and invited special solutions. The early Impressionists would have also seen that technical awkwardness, while frustrating and demanding, often becomes the generator of a new way, not only of making art, but also of looking at things. Forcing one art form to become another opens new opportunities for invention. Making art that centres on the playful subversion of familiar classification systems, teases out unexpected and extraordinary connections between people, facts and ideas. The fusion of recognisable visual forms, with incongruous conceptual associations, which achieve their own kind of legitimacy, shakes our faith in common logic, opening the door to a universe, governed by curiosity and imagination. Minsky (1980) asks, "[w]ill we be able to couple our artificial devices naturally and comfortably to work together with the sensory mechanisms of human organisms?" As the participant-players named objects in 'Star World', using their own imaginations to navigate the space - becoming part of the game, the design of my virtual environment, 'Star World', by combining creative fine art practice methodology with empirical research methodology, created artefacts that were manufactured with the aim of achieving a particular state of mind in viewers. This game environment allowed time and mental space for players to investigate abstract structures in a slow, gentle movement through an illogical space.

These illogical spaces influenced conscious and unconscious notions of self-identity and created unthought-of blendings with players' internal self and self-identity. The creation of alternative haute games has far-reaching implications for game design, to provide new methods of interacting with VEs, to create new types of opportunities to interact with these spaces, to use the environments as experimental and empirical test-beds and to provide innovative, emotional blendings, as set out by the rules. If an artwork reacts to the actions of different viewers/users, then it is customisable – no two viewers need see the same thing. More generally, players' positive response to their experience, whether in terms of flow (Hsu & Lu, 2004), or otherwise, can lead to a higher acceptance of a game and, ultimately, higher success in the marketing of games. It would be interesting to pursue the abstract meanings given to the abstract objects, in 'Star World', by mapping

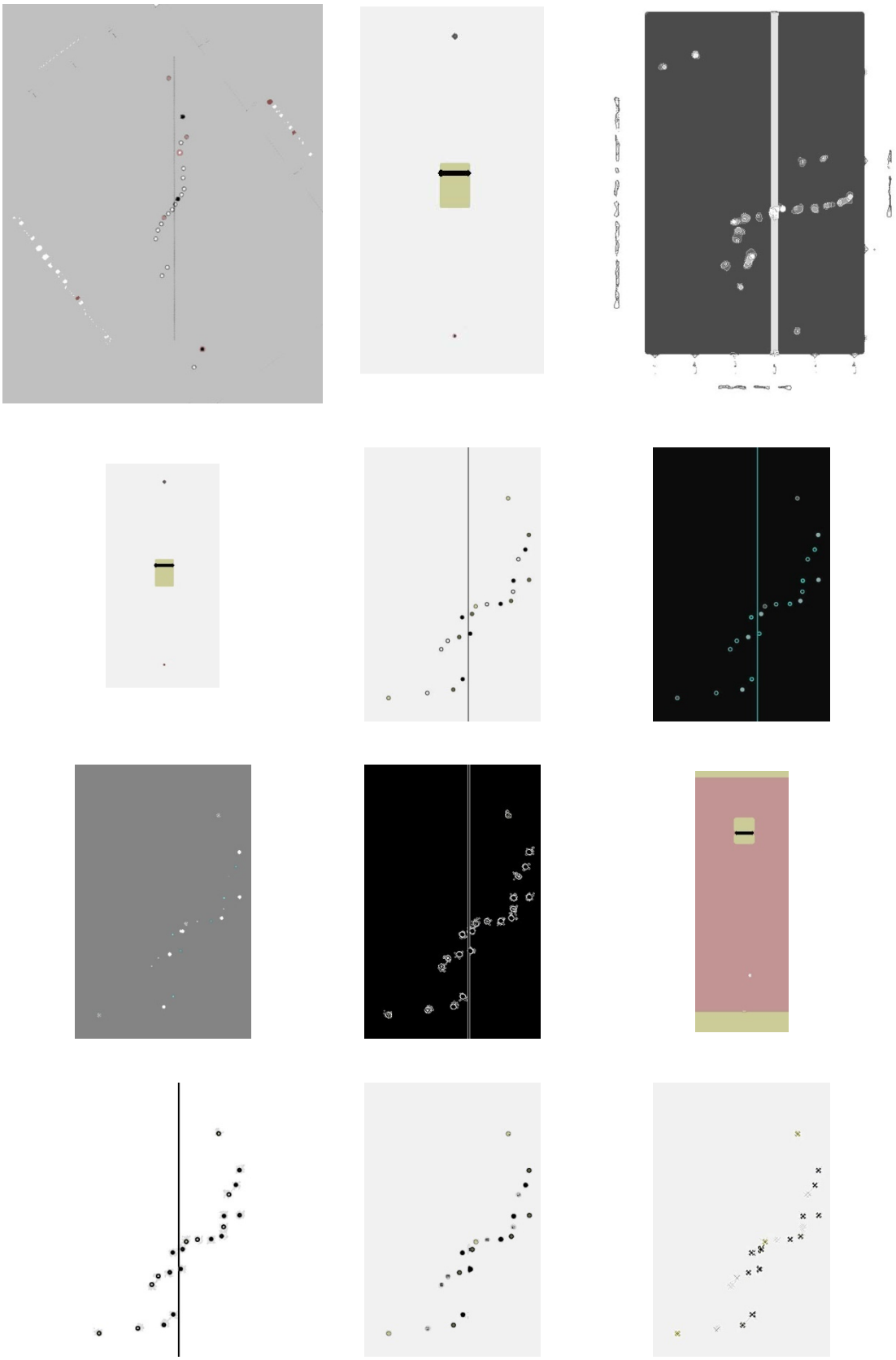
object names, to create an 'object map', transforming these tacit meanings into an organisational source, which makes mind processes visible. Customisation of web sites and software has received some attention in other fields' literature. Digital art offers a new domain for the study of the possibilities of customisation, which, in turn, leads to participation and blending opportunities.

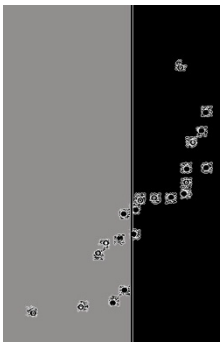
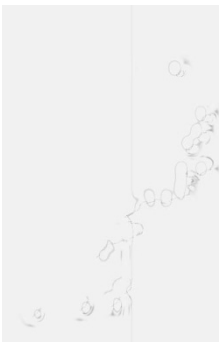
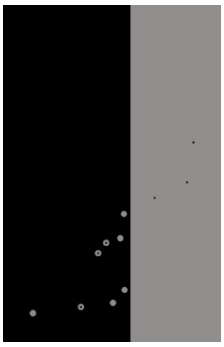
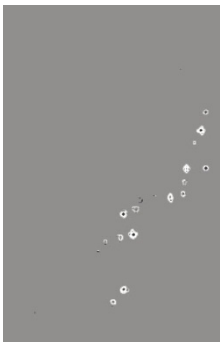
CONCLUSIONS

This 'game' has to end, eventually and this thesis has examined the blendings created between participants' self and self-identity, when navigating an abstract VE. One important contribution of this investigation was highlighting the need for alternative computer-game designs, computer games that relate and respond to different player-emotions and types. Another important contribution was the integration, or blending, of dissimilar fields and practices, which prove that a synthesis can be achieved and methods and practices can be used in alternative processes. These contributions, in turn, led to the formulation of haute-game rules to follow, in order to evaluate whether a game could, or should be classified as an haute game. Reflecting on these contributions, I concluded that games are, like art, shown to the general public, either in galleries, or in alternative spaces. There are movements and connections with self and self-identity when exploring and examining artefacts, when navigating and negotiating though a 'strange space' to assimilate materials. There are blendings created within computer-game players' self and self-identity, which create alternative blendings, sparking innovative interactions. Game designers, scientists and artists, all become experts in manipulating the console, or controller, to learn game play, or by investigating a hypothesis, or by investing manipulation of materials, to learn a new method of creating a piece of artwork, for example, adding water to oil paint. All explore alternative viewpoints and listen to internal instructions that relate to self-identity, to navigate and control an environment. All name objects and invent their own internal narrative, to interpret the game, or research idea, or piece of art, to shape personal understanding. All fields aspire to achieve their goal and achieve a higher level of practice and understanding. Finally, all have to say 'stop', somewhere. Using data created by the 'relax' and 'navigation' exercises, which generated empirical, logical data construction, I end this thesis by showing the combined uses of art practice and scientific practice, to illustrate the processes involved in subverting original empirical data, produced by the data analysis software, in an art practice method. Numerical data (POMs), produced in numerical format, were converted into graphs, producing a visual representation of the data. Using these graphs as inspiration to create original art pieces, the information was copied and pasted into a graphic software package, which was then manipulated, with various filters to produce imagery. By placing the images into Table 22, the table, created by word-processing software to contain information, becomes a metaphor for constructing a new art-space

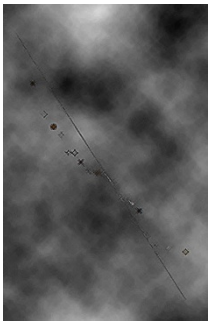
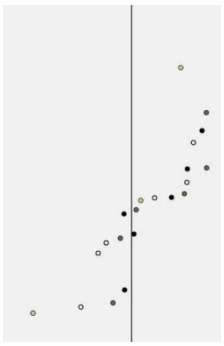
frame, containing these images. The table-creation tool becomes transformed into the artist's tool, creating a new visual space. These 'strange spaces' subvert the original construction of the analysis software and create an interconnection and blending with my 'self' and self-identity, indeed, becoming a true cycle of completion and renewal, revealing a part of my own self-blending; after all, if 0 is a number, if n is a number then n + 1 is a number and 1 + cube = blue sky. Make what you will of this sentence, the game is ended; or is the end a new beginning - or a new blending?

TABLE 22 ART PIECES INSPIRED BY SPSS DATA





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APPENDICES

APPENDIX I: DVD CONTENTS **245**

APPENDIX II: POMS QUESTIONNAIRE **247**

APPENDIX III: PROTOCOL CONSENT FORM **250**

APPENDIX IV: PROTOCOL STRUCTURE BREATHING COMPONENT **252**

APPENDIX V: PROTOCOL STRUCTURE STAR WORLD NAVIGATION **254**

APPENDIX VI: PROTOCOL STRUCTURE PARTICIPANT TRANSCRIPT **256**

APPENDIX VII: PHYSIOLOGICAL MEASUREMENTS **273**

APPENDIX VIII: PUBLISHED WORK **280**

A: PIXELRAIDERS CONFERENCE 281

B: WOMEN IN GAMES CONFERENCE 303

C: SENIOR FELLOW, DIGITAL CITY 310

D: PLAYFUL SUBJECTS CONFERENCE 315

E: WOMEN IN GAMES CONFERENCE 317

F: COMPUTER GRAPHICS, IMAGING & VISUALISATION CONFERENCE 333

G: MICROSOFT CORPORATION 350

H: WOMEN IN GAMES CONFERENCE 353

I: MEDIA TERRA CONFERENCE 355

J: UK ACADEMY FOR INFORMATION SYSTEMS CONFERENCE 367

K: EVA CONFERENCE 379

APPENDIX I:
DVD CONTENTS

DVD contains the following Folders and contents

Folders: Contents

Thesis_PDF

Thesis	PDF Document [*Format Word 2007*]
Appendices	PDF Document [*Format Word 2007*]

Thesis_Word

Thesis	Word Document [*Format Word 2007*]
Appendices	Word Document [*Format Word 2007*]

Thesis_ASCIIMSDOS

Thesis	ASCIIMSDOS
Appendices	ASCIIMSDOS

Star_World

Star World.exe	[*Format RTRE Publishing software*]

Note:
'Star World' was burned on to DVD as .exe file and should play on any computer with the following system or above.
System requirements:
Intel Pentium III or greater
Microsoft Windows XP or Vista
512MB RAM, CD ROM drive
A 64MB+ AGP Graphics card with OpenGL and Direct 3D hardware acceleration (GeForce and Quadro series).
32MB+ AGP Graphics cards are supported for presenting published scenes
The most notable thing here is the graphics card - it should be a Geforce 8 series or higher
n.b. Rtre .exe files will not play on MAC OS

Star_World_PDF_AVI

Star World	*PDF* Animation Presentation
Star World01	*PDF* Animation Presentation
Star_World_01	*.AVI* File

APPENDIX II:
POMS QUESTIONNAIRE

Relax Exercise

Gender	e.g. Male/Female	
Age	(Optional)	
Do you do any relaxation exercises?	Yes or No	
Do you do any meditation exercises?	Yes or No	

Each of the words listed on the following page describe a mood state.

- **Please work quickly through the words and your initial reaction is the best.**
- Please indicate using the rating scale **provided the extent to which you are experiencing each mood state at this moment in time**.
- Do this **by circling the number that most accurately corresponds to the way you are feeling at this moment in time**.
- Please make sure that you indicate **a response to all the mood states**.

HOW YOU ARE FEELING RIGHT NOW.

The numbers refer to these phrases

0 = Not at all
1 = A little
2 = Moderately
3 = Quite a lot
4 = Extremely

	0 = not at all		4 = Extremely
1. Tense	0 1 2 3 4	16. Lively	0 1 2 3 4
2. Shaky	0 1 2 3 4	17. Active	0 1 2 3 4
3. Uneasy	0 1 2 3 4	18. Energetic	0 1 2 3 4
4. Nervous	0 1 2 3 4	19. Full of pep	0 1 2 3 4
5. Anxious	0 1 2 3 4	20. Vigorous	0 1 2 3 4
6. Sad	0 1 2 3 4	21. Worn out	0 1 2 3 4
7. Unworthy	0 1 2 3 4	22. Fatigued	0 1 2 3 4
8. Discouraged	0 1 2 3 4	23. Exhausted	0 1 2 3 4
9. Lonely	0 1 2 3 4	24. Sluggish	0 1 2 3 4
10. Gloomy	0 1 2 3 4	25. Weary	0 1 2 3 4
11. Angry	0 1 2 3 4	26. Confusion	0 1 2 3 4
12. Grouchy	0 1 2 3 4	27. Muddled	0 1 2 3 4
13. Annoyed	0 1 2 3 4	28. Bewildered	0 1 2 3 4
14. Furious	0 1 2 3 4	29. Efficient	0 1 2 3 4
15. Bad-tempered	0 1 2 3 4	30. Forgetful	0 1 2 3 4

MAKE SURE YOU HAVE ANSWERED EVERY ITEM
Thank You

APPENDIX III:
PROTOCOL CONSENT FORM

Participant No

THE UNIVERSITY OF TEESSIDE

PARTICIPANT INFORMATION STATEMENT AND CONSENT FORM

Relaxation Study

Participant selection and purpose of study

You are invited to participate in a study of relaxation. You were selected as a possible participant in this study because you are within the age group of the remit of this study. (21 – 65)

Description of study

If you decide to participate, I will describe in simple language the procedures to be followed and you may have a copy of these procedures on request.

Confidentiality and disclosure of information

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or except as required by law. If you give us your permission by signing this document, we plan to publish the results in any publication relevant to the analysis of the collected data. Please note that any information obtained will be provided in such a way that you cannot be identified.

Feedback to participants

If you wish to receive feedback from the experiment results, please tick this box ☐

Your consent

If you decide to participate, you are free to withdraw your consent and to discontinue participation at any time without prejudice. Please ensure you provide us with the form attached which will be given to you when you register for the study. This number which will be your only identification.

If you have any questions, please feel free to ask us. If you have any additional questions later, please contact Maggie Parker 01642 38 4611 or m.parker@tees.ac.uk will be happy to answer them.

Signature of Investigator Signature of Research Participant

✂

PARTICIPANT INFORMATION STATEMENT AND CONSENT FORM

Relaxation Study

You are making a decision whether or not to participate. Your signature indicates that, having read the information provided above, you have decided to participate.

Signature of Research Participant Participant Number

Signature(s) of Investigator(s) Date

REVOCATION OF CONSENT

Relaxation Study

I hereby wish to **WITHDRAW** my consent to participate in the research proposal described above.

Participant Number Date

The section for Revocation of Consent should be forwarded to Maggie Parker, University of Teesside, School of Computing, Tangram House, Middlesbrough, UK TS1 3BA. *Or* contact 01642 38 4611 or e mail m.parker@tees.ac.uk

APPENDIX IV:
PROTOCOL STRUCTURE BREATHING COMPONENT

Protocol Breathing Script

Hello,

In a moment you will be asked to undertake what's called a 'breathing exercise'. This is part of a process to help us understand how people relax.

It is in no way a test of you, but rather an attempt to understand people's experiences with relaxation.

There are three parts to the experiment which should take no longer than 30 minutes to complete

The first part of the exercise will be filling in a questionnaire, please answer all the categories.

For the next part of the experiment, you will be taken into a quiet room, all you have to do is

Sit quietly in a chair and concentrate on your breathing

It is important that while you do this exercise you do so as an individual, in complete silence and without any distractions, for example mobile phones or any electronic device should be left outside the room. It is preferable to leave them with the supervisor. It does not matter what any other participant does, just you. There is no right or wrong way to do this experiment.

The supervisor of the experiment will tell you when it is time to finish and will escort you from the room.

The last part of the experiment is to ask you to complete another questionnaire.

Once you have completed the exercise there will be a short feedback discussion where you will be asked some questions on your opinion of the exercise. We would welcome any views and opinions you have, please feel able to share them freely with us.

Thank you for your participation in this breathing exercise.

APPENDIX V:
PROTOCOL STRUCTURE STAR WORLD NAVIGATION

Protocol *'Star World'* Script

Hello,

In a moment you will be asked to navigate around a virtual environment. It does not matter how competent you are with a computer, full instructions will be given. It is in no way a test of you, but rather an attempt to understand people's experiences with relaxation.

There are three parts to the experiment which should take no longer than
30 minutes to complete. (Time to be decided after initial testing)
(This time was decided after initially testing 5 people)

The first part of the exercise will be filling in a questionnaire, please answer all the categories.

For the next part of the experiment,

You will be taken into a quiet room, all you have to do is sit in a chair at a desk and use the computer that is there to navigate around a virtual environment which will be open and ready to navigate.

If you have never used a computer before – you will be shown how to use the simple navigation tools.

It is important that while you do this exercise you do so as an individual, in complete silence and without any distractions, for example mobile phones or any electronic device should be left outside the room. It is preferable to leave them with the supervisor. It does not matter what any other participant does, just you. There is no right or wrong way to do this experiment.

During the session the screen will be recorded by video tape with the camera positioned to record the screen. The video will be shot from behind and over your shoulder so you will not be identified in any way.

The supervisor of the experiment will tell you when it is time to finish and will escort you from the room.

The last part of the experiment is to ask you to complete another questionnaire.

Once you have completed the exercise there will be a short feedback discussion where you will be asked some questions on your opinion of the exercise. We would welcome any views and opinions you have, please feel able to share them freely with us. You will be shown the video recording which is used purely to aid your memory of the experiment.

Thank you for your participation in this 'Star World' exercise.

APPENDIX VI:
PROTOCOL STRUCTURE PARTICIPANT TRANSCRIPT

Transcript	Verbs	Concept	Movement	Emotions	Objects	Environment	Colours	Sound
a	am	Abstract	360%	about	2d	Above	Black	calming
A	Bearings	Air	Acceleration	affected	2d	Above	black	Hissing
A	Became	Alien	Aim	after	3 clumps	Above	Black	loop
A	because	around	Aim	Aggressive	3d	Alleys	Blue	Mixed
a	because	bit	aiming	agitated	3d	Angular	blue	Mixture
A	before	Bit	aiming	Altered	50p pieces	Area	Blue	Music
A	Before	Bit	Aimlessly	Amazed	Aeroplanes	area	Blue	Muted
A	Being	Bit	angles	Annoyance	arrows	Areas	Blue	Noise
A	Being	Bit	Animation	Annoyed	Art	ashore	Blue	Noise
A	being	Bits	animation	annoyed	Artefacts	backdrop	Blue	Noise
A	Between	Chill	animation	annoyed	bees	Background	blue	Noise
A	Conducive	Concept	Animation	Annoying	Bees	Background	blue colours	noise
A	could	Context	Animation	Annoying	Bird	Background	bright	Noise
A	couldn't	Contributed	Animation	Annoying	Birds	background	colour	on
A	didn't	Dead	Animation	Appealing	Birds	Beach	Colour	quite
A	Disappeared	Deep	Animation	Appearance	Bowls	beach	Colour	Rustly
A	Discover	Depth	Animation	Associated	Bowls	Big	colours	Sea
A	even	Depth	Animation	Assume	Bowls	Big	Colours	Sea
A	Had	Effect	animation	Attention	Build	Big	Colours	Sea
a	Had	Effect	Animation	Attention	Building	Bigger	Colours	Sea
a	had	Effect	Animation	attracted	Buildings	Boundaries	Colours	Sea
a	Had	Effective	Animation	Attracted	Buildings	Boundaries	Colours	Sea
a	had	End	Animation	Attractive	Built	Boundaries	Colours	sound
a	Happening	End	Animation	Aware	Castles	Bright	Colours	Sound
a	Happening	Fantasy	anything	bored	Castles	Bright	Colours	Sound
a	Have	Fantasy	Approach	Bored	Chair	Brilliant	Colours	Sound
a	Have	game	Around	Boring	Circle	Canyons	colours	Sound
a	Have	Goal	Around	Boring	circles	Circumference	Colours	Sound
a	Having	Goal	Around	Boring	Circles	Cliff	Colours	sound
a	Hear	Gravity	Around	Boring	clump	cloth	Colours	Sound
About	Hear	holiday	Around	Boring	clumped	Cluttered	Colours	Sound
After	know	Idea	Around	Boring	Clusters	Constellation	Colours	Sound
After	like	Illogical	Around	Breath	Coaster	corners	Colours	Sound
All	like	Information	away	calmer	computer	Craters	Colours	Sound

All	Listening	Interested	Away	calming	computer	Curvature	Colours	Sound
All	Logical	interesting	Away	Changed	Computer	Curves	Colours	Sound
all	Long	Interesting	Away	Changing	Cup	dead	Colours	Sound
also	Long	Interesting	Backwards	Character	Cup	Desert	Colours	Sound
Am	Longer	Interesting	Backwards	Comfortable	Cup object	desert	Colours	Sound
An	Longer	Interesting	Been	Concentrated	Cups	Different	Colours	Sound
An	longer	Interesting	Beginning	Curiosity	Cups	Different	Colours	Sound
An	Longer	Interesting	Blast	Curious	Cups	Different	Colours	Sound
An	Longer	Learn	Caught	Curious	Cups	different	Colours	Sound
An	Longer	Learning	closer	Curious	cups	Different	Colours	Sound
an	Made	me	Closer	Curious	cups	Different	Colours	Sound
an	Made	Mind	Coming	curious	Cursor	Different	Colours	Sound
And	Made	non	Completed	curious	dots	Different	Colours	Sound
and	Made	Nothing	Constraints	curious	Ducks	Different	Colours	Sound
and	Made	nothing	Control	Daydream	dunes	Difficult	Colours	Sound
and	Made	Nothing	Control	Depressing	Eye	Distance	colours	Sound
And	Made	Nothing	Control	Disappointing	Faces	Distance	colours	Sound
And	made	Notice	Control	Disliked	Female	distance	colours	sound
And	made	Noticed	Control	Disorientated	Fin	Dome	Combination	sound
And	Makes	Observer	controls	Distracting	Fish	drop	Combinations	Sounds
And	Meditating	Personal	Controls	Easy	Five	Earth	Combined	Sounds
And	More	player	Controls	Easy	Flat	Edge	Cool	Sounds
And	More	Purpose	Controls	Easy	Flock	Edge	Dark	Sounds
And	More	Reminded	Controls	Easy	Flower	end	Dark	stopped
And	More	Reminded	Controls	Easy	Flowers	environment	Dark	Water
And	More	Reminded	Controls	Easy	flowers	environment	Dark	Water
And	More	Reminded	Controls	Easy	flowers	Environment	Garish	Water
And	More	Reminded	Controls	Energetic	fuzz	Environment	Gold	Water
And	More	Some	controls	Enjoy	Geese	Environment	Iridescent	Waterfall
And	More	Some	Controls	Enjoyable	goblet	Environment	Metallic	Watery
And	More	Some	Counteracted	enjoyed	goblets	environment	mixture	waves
And	Much	Something	different	Enjoyed	goblets	Environment	Opal	waves
and	much	Somewhere	Direction	Enjoyed	Goblets	Environment	Pastel	Wind
and	noticed	Somewhere	Directional	Enjoyed	Goblets	environment	Pearl	Wind
and	occur	Strange	dizzy	Enjoyed	Hair	environment	Pink	

and	on	Surreal	Doing	Enjoyed	Hexagon	environment	Plastercine
and	Plan	Thought	Down	Enjoyed	hexagons	Far	Pretty
and	play	understand	down	Enjoyed	Hexagons	Field	pretty
and	Play	Unreal	Down	Enjoyed	Hexagons	Fields	Pretty
and	Player	Unreal	Down	Enjoyment	Hexagons	Floor	Pretty
and	playing		Down	Enough	hexagons	Floor	purple
and	Plenty		down	enough	hexagons	Forest	Purple
Another	Point		Drawn	Enough	hexagons	galaxy	Purple
Another	Point		Drawn	Enough	Hill	Game	Purple
Anything	Pointless		Drawn	Equality	Hill	games	Purple
Anything	Puzzles		Drove	Exciting	Hills	Geometric	purple
Anywhere	Reasonably		Escaped	Expectations	Humanoid	Glistening	quite
Are	Reasonably		everything	Expected	Jet	Google	Rainbow
as	Remain		Exploration	Expected	Jewels	Graphic	Red
As	reminded		exploration	Experience	Key	Grassy	red
As	reminded		Exploration	Experience	Lamps	Grid	repeated
As	Reward		Exploration	Exploration	Leafless	Ground	ruby
as	Saw		explore	Feel	Leaves	Ground	Shiny
At	Saw		explore	Feel	Light	Ground	Soft
at	saw		Explore	Feel	Light	Ground	Sombre
At	saw		Explore	Feel	Lights	ground	turquoise
At	Saw		Explore	Feel	Lights	ground	White
At	See		Explore	Feel	modules	Heavens	White
At	See		Explore	Feel	modules	High	white
At	See		Explore	Feel	Molecules	High	Yellowy
At	See		Explore	feel	Moon	high	
At	See		Explore	Feeling	Mouse	Images	
At	See		Explore	Feeling	Mug	island	
at	See		Explored	Feeling	Nebula	Land	
at	see		Explored	Feeling	Object	Land	
at	see		Explored	Feeling	Objects	Landmass	
at	Seem		Explored	Feeling	Objects	landscape	
Be	Seem		Explored	Feelings	Objects	Landscape	
Be	Seemed		Exploring	Fell	Objects	Landscape	
Be	Seemed		Fairly	Felt	Objects	Landscape	

Be	Slightly	Fall	Felt	Objects	Landscape
Because	Spend	Fast	Felt	Objects	Landscape
Because	Spent	Fast	Felt	Objects	Level
before	Spent	Fast	Felt	Objects	Level
But	Suit	Fast	Felt	Objects	level
But	Sure	Faster	felt	Objects	Lines
But	though	Faster	felt	Objects	Lines
by	thought	Faster	felt	Objects	Lines
by	Tried	Find	felt	Objects	little
Could	Tried	Find	felt	Objects	little
Could	Tried	Find	felt	Objects	Little
Could	Tried	Finding	Fine	Objects	Little
Could	trying	Finish	Focused	Objects	Little
Couldn't	understand	Flew	forgot	Objects	Little
couldn't	Urge	Flew	Frustrated	objects	Little
Couldn't	use	Flew	Frustrated	parts	Location
Couldn't	Use	Flew	Frustrated	people	lovely
Did	Use	Floated	Frustrated	Pieces	Map
Didn't	Used	Floating	Frustrated	Planet	miniature
Didn't	wanted	Floating	frustrated	Planets	Mother
didn't	was	Floating	Frustrating	Planets	mountain
Didn't	Was	Fly	Frustrating	Plant	mountain
Didn't	Was	Fly	Frustrating	poly	Mountains
Didn't	Was	Flying	Frustrating	Rangers	mountains
Didn't	Was	Flying	Frustrating	Reed	Mountains
Didn't	Was	Flying	Frustrating	Remnants	Mountains
Didn't	Was	Forward	Frustration	Rocks	Northern
Didn't	Was	Forwards	Frustration	Roller	Odd
Didn't	Was	Forwards	Gentle	Saucers	Odd
Didn't	Was	Found	Giddy	Scattered	Painted
Didn't	Was	Found	Gloomy	Seaweed	Papery
Didn't	Was	Found	Good	Seaweed	Part
Didn't	Was	found	Happy	Semi transparent	parts
didn't	Was	Found	Happy	Shapes	Pattern

Do	Was	Found	Happy	Shapes	Patterns
Do	Was	From	Hate	Shapes	Patterns
Doesn't	Was	From	Helped	Shapes	Perspective
don't	Was	From	Hours	Shapes	Pit
Don't	Was	From	Hours	Shapes	Pixelated
Don't	Was	From	Immersed	sharp	Place
Due	was	From	intense	Shell	Place
Else	was	from	intrigued	Shell	Places
Everything	was	Front	intriguing	Shell	Quality
Few	was	Further	Intrusive	Shoulders	Real
First	was	Further	Intrusive	sky	Real
First	was	Further	Involved	Small	Realistic
For	was	Further	Irritated	Spaceman	Realistic
For	was	games	Irritating	spaceships	Realistic
For	was	Get	Kill	Spaceships	Realistic
For	was	Get	like	Squares	Representational
For	was	Get	Like	Star	river
for	was	get	Like	Stars	rocky
for	was	get	Like	Station	rocky
General	was	Get	Like	Statuette	Room
How	was	Get	Like	Stem	Scale
How	was	Get	Like	Sticks	Scene
I	was	getting	Like	Sticks	Scenery
I	was	Glitchy	Like	Structure	Scheme
I	was	Go	Like	Structures	Scope
I	wasn't	Go	Like	Symbols	Screen
I	went	Go	Like	Tadpoles	Seashore
I	went	Go	Like	Thing	Secret
I	were	Go	Liked	Thing	Sight
I	were	Go	Liked	Things	silk
I	were	Go	Liked	Things	Similar
I	were	go	Liked	Things	Size
I	were	go	Liked	Things	Sky
I	what	go	Limited	Things	Sky
I	what	Going	Limiting	Tree	Sky

I	while	Going	lonely	Trees	Sky
I		Going	Loved	Trees	Sky
I		going	Loved	Two	Sky
I		Got	Mad	Vase	sky
I		Headed	muddled	whales	Sky
I		Headed	Needed	Windows	Sky
I		here	Needed	Woman	Sky
I		Holding	Needed	word	Sky
I		In	never	worms	Sky
I		In	Nice		Sky
I		In	Nice		Sky
I		In	Nice		Sky
I		In	Nice		Sky
I		In	Nice		Sky
I		In	Nice		Sky
I		In	Non		Space
I		in	Non threatening		Space
I		In	Not frustrate		Space
I		In	Off putting		Space
If		In	Off-putting		Spangles
If		In	Perked		Sphere
If		In	Pleasant		Sphere
In		In	Pleasant		Stretched
Initially		In	Positive		Style
Is		In	problems		surface
Is		In	Ready		surface
Is		In	Ready		Texture
it		In	Relax		Textures
It		In	Relaxation		Textures
It		In	Relaxed		Textures
It		In	Relaxed		Transparency
It		In	relaxed		Tunnels
It		In	Relaxed		Universe
It		In	Relaxed		valley
It		In	Relaxed		valley

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Sensitive
sick
Sick
Sleepy
Soothing
Stomach
Stress free
Stressed
Stressed
Stressful
Surprised
Suspicious
Thoughts
Threatened
Threatened
Time
Time

valley
valley
Valleys
Valleys
Variety
Various
version
Ve's
Walls
water
Weird
Weird
Weird
Wires
World
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World
World
World
Worlds
Zone
Zones

Me	looking	Time
Me	Lost	Time
me	Lost	Tired
me	Lots	Tired
me	Miles	Together
No	Minutes	Trouble
No	motion	understand
No	Move	Uneasiness
No	moved	Uneasy
No	Moved	very
No	Movement	Very
No	Movement	Very
No	Movement	Very
No	Movement	Very
No	Movement	Very
No	movement	Very
No	moving	Very
No	Moving	Want
No	Moving	Wanted
Not	moving	Wanted
Not	moving	wanted
Not	Navigate	wanted
Not	Navigate	wanted
Not	navigated	wanted
Not	Navigated	Wanted
Not	Navigating	Wanted
Not	navigating	Wanted
Not	Navigating	Wanted
Not	Navigation	Wanted
Not	Navigation	Wanted
not	Navigation	Wanted
Not	Navigation	Wanted
Not	Navigation	Wanted
not	navigation	Wanted
Not	no	Wanted

Not	noticed none	Wanted
Not	nowhere	Wanted
Not	Objective	Wanted
Not	Odyssey	Wanted
Not	Off	wanted
Not	Off	wanted
Of	Off	Wobbly
Of	Off	Wobbly
Of	On	
Of	On	
Of	On	
Of	On	
Of	On	
Of	On	
Of	On	
Of	On	
Of	On	
Of	On	
Of	On	
Of	On	
Of	on	
Of	Onto	
Of	Onto	
Of	Open	
Of	Orbit	
Of	Orbit	
Of	Out	
Of	Out	
Of	Out	
Of	Out	
Of	Outside	
Of	Outside	
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Other
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Other
Other
Own
Over
Overview
Pace
Pace
paths
Physics
Piloting
Playing
Playing
Problem
Progression
Quickly
Reached
right
Right
Right
Right
Rotated
Rotating
Round
round
Searching
see
see
sickness
Side
Side
sitting
Sitting
Sitting
Slow
Slow
Slow
Slow
Slow

Own
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Quite
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Quite
Really
Really
Really
Really
Same
So
some
sure
Terms
Than
Than
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Slow
Slow
slow
slower
speed
speed
Speed
Speed
Speed
Speed
Speeding
Speeds
Spotted
Start
Stay
Stay
Stay
Stay
Stayed
Stayed
stayed
Still
Stop
stop
Stopped
stopped
Stopped
Strafed
Straight
Straight
Stuck
surrounded
Switch
Systematic
Systematic

The	task
The	Tense
the	Testing
the	through
the	Through
the	Through
the	Through
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The	To
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Them	To
Them	To
Them	To
Then	To
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There	To
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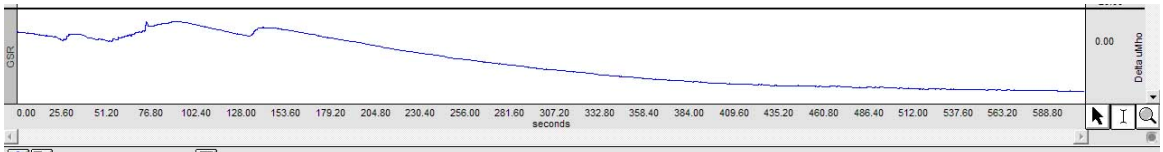
to	To
Too	To
too	To
Too	To
Total	To
TV	To
Until	To
until	To
up	To
up	To
was	To
was	To
was	To
was	To
Well	To
Well	To
Well	To
Were	To
Were	To
Were	To
were	To
were	To
What	To
What	to
What	To

What	To
What	To
What	To
what	To
what	To
When	To
When	To
Where	To
where	To
Weren’t	To
whether	To
While	To
While	To
Whole	To
Why	To
Why	To
With	To
With	To
With	to
With	to
With	to
With	to
With	to
with	to
with	to
with	to
Within	Too responsive
Without	Touch
Would	Towards
Would	Towards
Would	Towards
You	Towards
Your	towards
	Travelling
	Tricky

Turned
two
two
Unhurried
Up
up
Up
Up
Up
Up
upside
viewed
Viewing
Walk
Walk
Walk
Walked
Walking
walking
walking
Wander
Wander
Wandered
Wandered
Wandered
Wandering
Wandering
washing
watch
Watch
Watched
watching
Way
Ways
ways

ways
Went
Went
Went
Went
went
went
Zoom

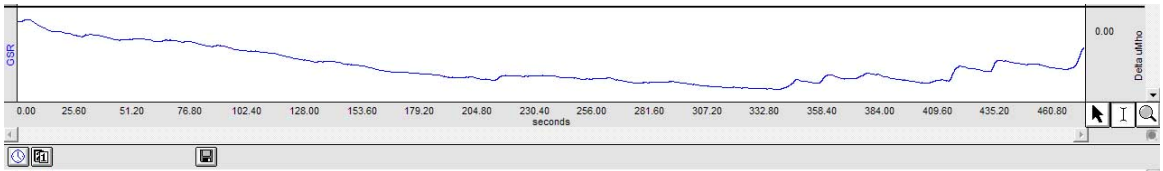
APPENDIX VII:
PHYSIOLOGICAL MEASUREMENTS



12:52:41
22 September 2006

Mean(42) = 0.072 Delta uMho	StdDev(42) = 0.034 Delta uMho	Max(42) = 0.135 Delta uMho	Min(42) = -0.002 Delta uMho	deltaT(42) = 60.620 sec
Mean(42) = -0.285 Delta uMho	StdDev(42) = 0.309 Delta uMho	Max(42) = 0.274 Delta uMho	Min(42) = -0.643 Delta uMho	deltaT(42) = 488.910 sec
Mean(42) = -0.653 Delta uMho	StdDev(42) = 0.007 Delta uMho	Max(42) = -0.637 Delta uMho	Min(42) = -0.668 Delta uMho	deltaT(42) = 59.950 sec

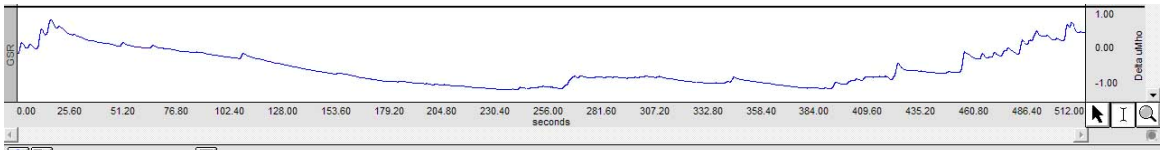
Lesson 14 - Biofeedback
File name: part_04-L14
Monday, September 04, 2006
10:35:41 AM



12:48:51
22 September 2006

Mean(42) = -0.029 Delta uMho	StdDev(42) = 0.082 Delta uMho	Max(42) = 0.155 Delta uMho	Min(42) = -0.129 Delta uMho	deltaT(42) = 60.080 sec
Mean(42) = -0.528 Delta uMho	StdDev(42) = 0.172 Delta uMho	Max(42) = -0.114 Delta uMho	Min(42) = -0.749 Delta uMho	deltaT(42) = 354.320 sec
Mean(42) = -0.446 Delta uMho	StdDev(42) = 0.063 Delta uMho	Max(42) = -0.213 Delta uMho	Min(42) = -0.638 Delta uMho	deltaT(42) = 60.580 sec

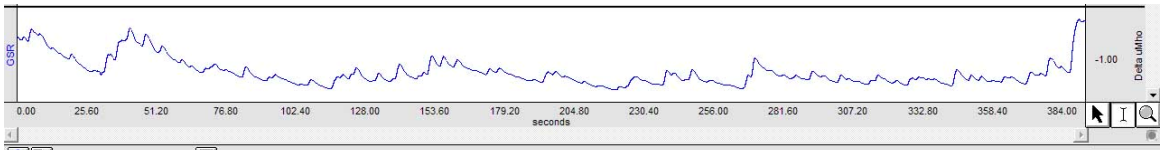
Lesson 14 - Biofeedback
File name: part_5-L14
Monday, September 04, 2006
11:38:41 AM



12:58:40
22 September 2006

Mean(42) = 0.245 Delta uMho	StdDev(42) = 0.209 Delta uMho	Max(42) = 0.804 Delta uMho	Min(42) = -0.149 Delta uMho	deltaT(42) = 60.000 sec
Mean(42) = -0.781 Delta uMho	StdDev(42) = 0.321 Delta uMho	Max(42) = 0.086 Delta uMho	Min(42) = -1.178 Delta uMho	deltaT(42) = 393.380 sec
Mean(42) = 0.086 Delta uMho	StdDev(42) = 0.316 Delta uMho	Max(42) = 0.735 Delta uMho	Min(42) = -0.679 Delta uMho	deltaT(42) = 60.550 sec

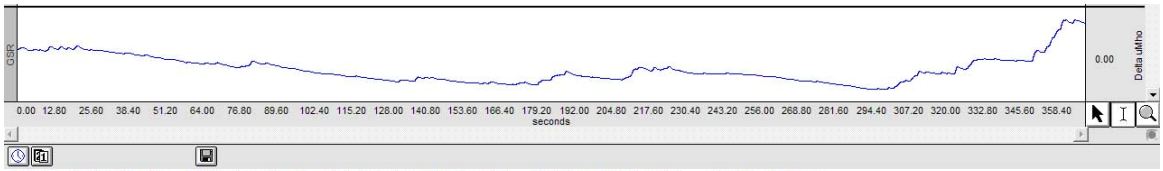
Lesson 14 - Biofeedback
File name: part_6-L14
Monday, September 04, 2006
02:19:20 PM



13:00:26
22 September 2006

Mean(42) = -0.835 Delta uMho	StdDev(42) = 0.212 Delta uMho	Max(42) = -0.449 Delta uMho	Min(42) = -1.262 Delta uMho	deltaT(42) = 60.190 sec
Mean(42) = -1.291 Delta uMho	StdDev(42) = 0.117 Delta uMho	Max(42) = -0.930 Delta uMho	Min(42) = -1.517 Delta uMho	deltaT(42) = 272.110 sec
Mean(42) = -1.219 Delta uMho	StdDev(42) = 0.258 Delta uMho	Max(42) = -0.302 Delta uMho	Min(42) = -1.448 Delta uMho	deltaT(42) = 60.180 sec

Lesson 14 - Biofeedback
File name: part_7-L14
Monday, September 04, 2006
03:42:32 PM



Mean(42) = 0.112 Delta uMho StdDev(42) = 0.078 Delta uMho Max(42) = 0.227 Delta uMho Min(42) = -0.062 Delta uMho deltaT(42) = 60.030 sec
Mean(42) = -0.295 Delta uMho StdDev(42) = 0.114 Delta uMho Max(42) = -0.034 Delta uMho Min(42) = -0.518 Delta uMho deltaT(42) = 247.270 sec
Mean(42) = 0.044 Delta uMho StdDev(42) = 0.294 Delta uMho Max(42) = 0.671 Delta uMho Min(42) = -0.374 Delta uMho deltaT(42) = 60.410 sec
Lesson 14 - Biofeedback
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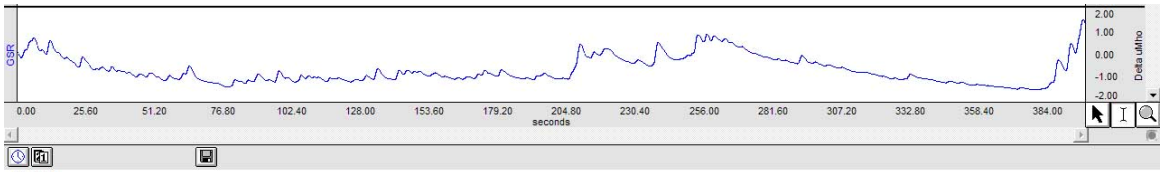
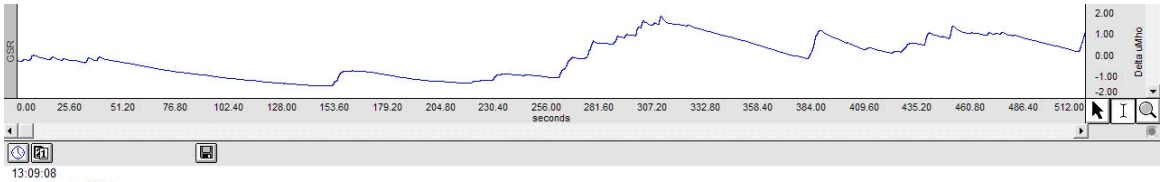
Monday, September 04, 2006
04:14:15 PM

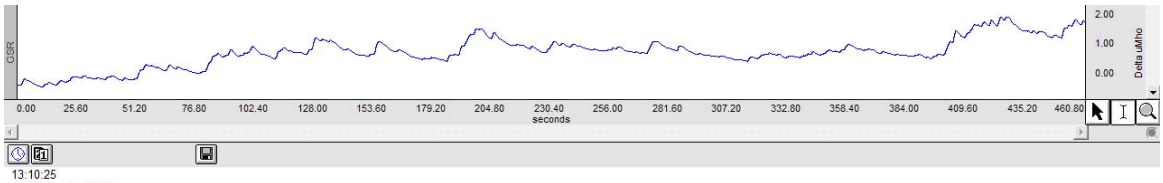


13:07:03
22 September 2006
Mean(42) = -0.439 Delta uMho StdDev(42) = 0.529 Delta uMho Max(42) = 0.769 Delta uMho Min(42) = -1.154 Delta uMho deltaT(42) = 60.160 sec
Mean(42) = -0.638 Delta uMho StdDev(42) = 0.554 Delta uMho Max(42) = 0.949 Delta uMho Min(42) = -1.449 Delta uMho deltaT(42) = 277.170 sec
Mean(42) = -1.082 Delta uMho StdDev(42) = 0.687 Delta uMho Max(42) = 1.603 Delta uMho Min(42) = -1.575 Delta uMho deltaT(42) = 60.150 sec

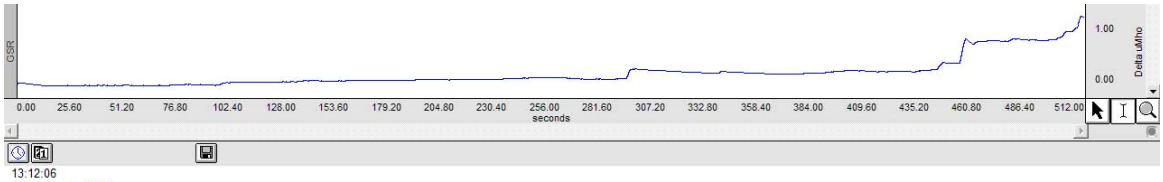
Lesson 14 - Biofeedback
File name: part_10-L14
Tuesday, September 05, 2006
10:46:14 AM



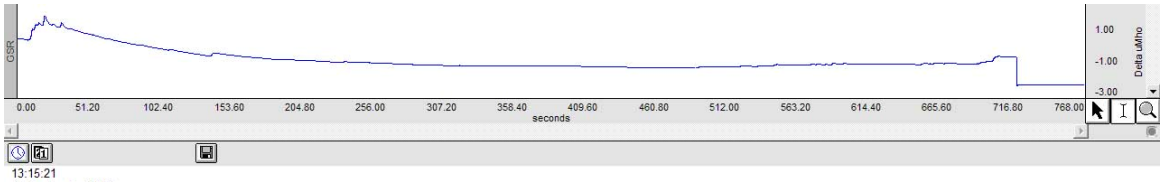
13:09:08
22 September 2006
Mean(42) = -0.224 Delta uMho StdDev(42) = 0.109 Delta uMho Max(42) = 0.034 Delta uMho Min(42) = -0.489 Delta uMho deltaT(42) = 60.240 sec
Mean(42) = -0.193 Delta uMho StdDev(42) = 0.961 Delta uMho Max(42) = 1.875 Delta uMho Min(42) = -1.448 Delta uMho deltaT(42) = 396.030 sec
Mean(42) = 0.786 Delta uMho StdDev(42) = 0.290 Delta uMho Max(42) = 1.176 Delta uMho Min(42) = 0.198 Delta uMho deltaT(42) = 60.230 sec
Lesson 14 - Biofeedback
File name: part_11-L14
Tuesday, September 05, 2006
11:19:50 AM



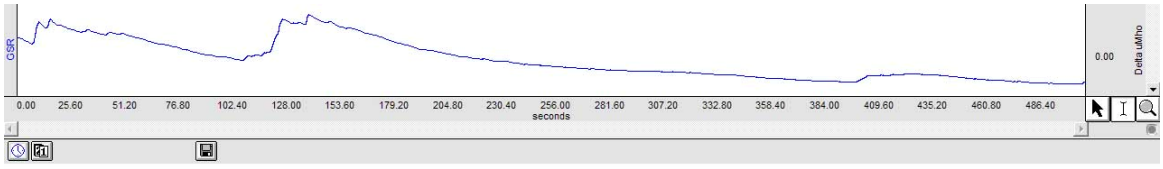
13:10:25
22 September 2006
Mean(42) = -0.185 Delta uMho StdDev(42) = 0.186 Delta uMho Max(42) = 0.297 Delta uMho Min(42) = -0.484 Delta uMho deltaT(42) = 60.430 sec
Mean(42) = 0.726 Delta uMho StdDev(42) = 0.259 Delta uMho Max(42) = 1.525 Delta uMho Min(42) = -0.020 Delta uMho deltaT(42) = 341.110 sec
Mean(42) = 1.511 Delta uMho StdDev(42) = 0.238 Delta uMho Max(42) = 1.924 Delta uMho Min(42) = 0.713 Delta uMho deltaT(42) = 60.420 sec
Lesson 14 - Biofeedback
File name: part_12-L14
Tuesday, September 05, 2006
01:46:39 PM



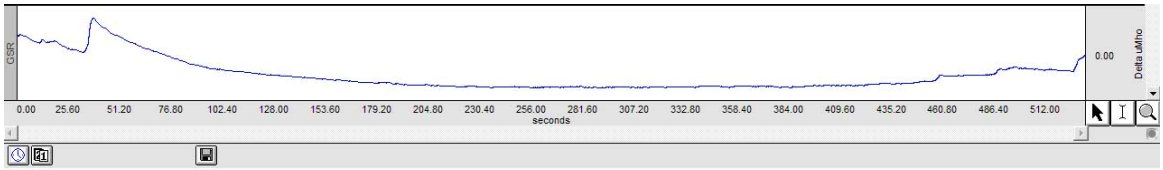
13:12:06
22 September 2006
Mean(42) = -0.114 Delta uMho StdDev(42) = 0.015 Delta uMho Max(42) = -0.064 Delta uMho Min(42) = -0.133 Delta uMho deltaT(42) = 60.440 sec
Mean(42) = 0.056 Delta uMho StdDev(42) = 0.107 Delta uMho Max(42) = 0.508 Delta uMho Min(42) = -0.123 Delta uMho deltaT(42) = 397.350 sec
Mean(42) = 0.820 Delta uMho StdDev(42) = 0.124 Delta uMho Max(42) = 1.255 Delta uMho Min(42) = 0.392 Delta uMho deltaT(42) = 60.430 sec
Lesson 14 - Biofeedback
File name: part_13-L14
Tuesday, September 05, 2006
02:56:37 PM



13:15:21
22 September 2006
Mean(42) = 0.984 Delta uMho StdDev(42) = 0.380 Delta uMho Max(42) = 1.906 Delta uMho Min(42) = 0.343 Delta uMho deltaT(42) = 60.100 sec
Mean(42) = -1.084 Delta uMho StdDev(42) = 0.415 Delta uMho Max(42) = 0.529 Delta uMho Min(42) = -1.463 Delta uMho deltaT(42) = 651.810 sec
Mean(42) = -2.222 Delta uMho StdDev(42) = 0.683 Delta uMho Max(42) = -0.728 Delta uMho Min(42) = -2.621 Delta uMho deltaT(42) = 60.080 sec
Lesson 14 - Biofeedback
File name: part_14-L14
Tuesday, September 05, 2006
03:33:06 PM

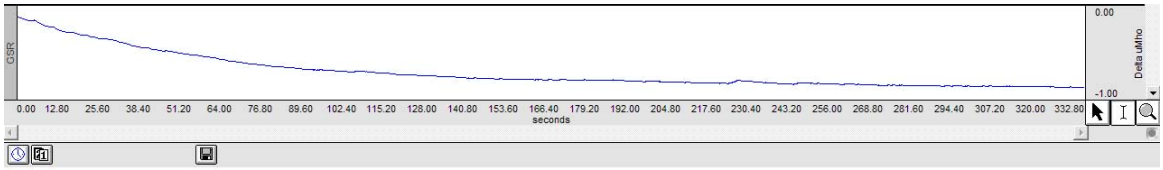


13:23:31
22 September 2006
Mean(42) = 0.385 Delta uMho StdDev(42) = 0.088 Delta uMho Max(42) = 0.588 Delta uMho Min(42) = 0.195 Delta uMho deltaT(42) = 60.320 sec
Mean(42) = -0.063 Delta uMho StdDev(42) = 0.278 Delta uMho Max(42) = 0.666 Delta uMho Min(42) = -0.404 Delta uMho deltaT(42) = 387.140 sec
Mean(42) = -0.395 Delta uMho StdDev(42) = 0.032 Delta uMho Max(42) = -0.326 Delta uMho Min(42) = -0.437 Delta uMho deltaT(42) = 60.310 sec
Lesson 14 - Biofeedback
File name: part_15-L14
Tuesday, September 05, 2006
04:31:52 PM

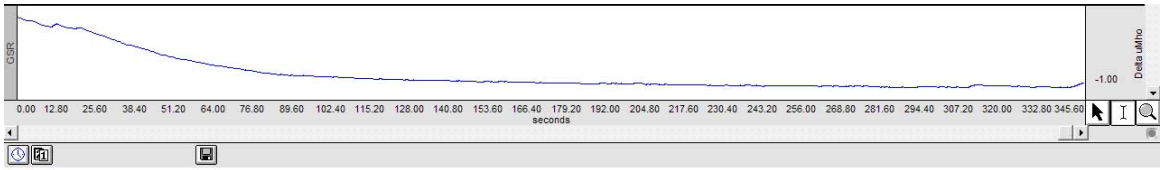


13:28:56
22 September 2006
Mean(42) = 0.152 Delta uMho StdDev(42) = 0.072 Delta uMho Max(42) = 0.338 Delta uMho Min(42) = 0.038 Delta uMho deltaT(42) = 60.310 sec
Mean(42) = -0.220 Delta uMho StdDev(42) = 0.077 Delta uMho Max(42) = 0.095 Delta uMho Min(42) = -0.282 Delta uMho deltaT(42) = 410.080 sec
Mean(42) = -0.122 Delta uMho StdDev(42) = 0.036 Delta uMho Max(42) = 0.018 Delta uMho Min(42) = -0.170 Delta uMho deltaT(42) = 60.300 sec

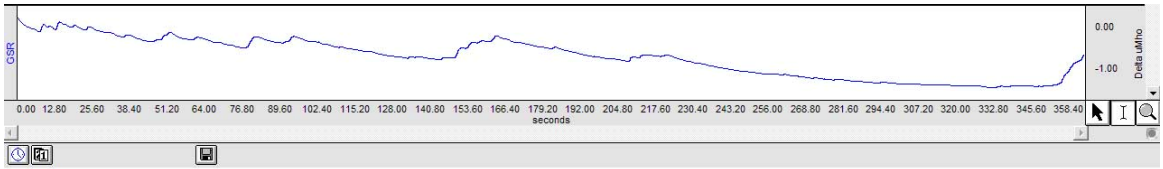
Lesson 14 - Biofeedback
File name: part_16-L14
Wednesday, September 06, 2006
09:13:45 AM



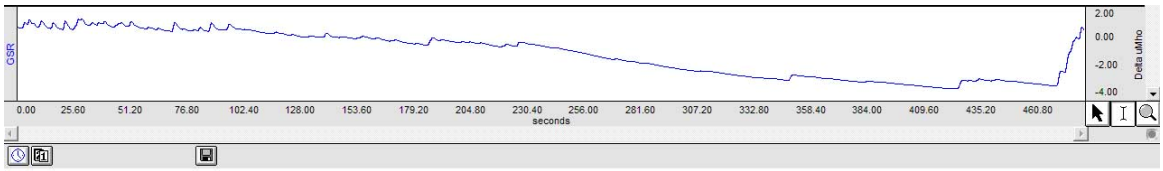
13:32:30
22 September 2006
Mean(42) = -0.324 Delta uMho StdDev(42) = 0.134 Delta uMho Max(42) = -0.059 Delta uMho Min(42) = -0.525 Delta uMho deltaT(42) = 60.110 sec
Mean(42) = -0.761 Delta uMho StdDev(42) = 0.080 Delta uMho Max(42) = -0.523 Delta uMho Min(42) = -0.858 Delta uMho deltaT(42) = 217.140 sec
Mean(42) = -0.867 Delta uMho StdDev(42) = 0.007 Delta uMho Max(42) = -0.853 Delta uMho Min(42) = -0.881 Delta uMho deltaT(42) = 60.100 sec
Lesson 14 - Biofeedback
File name: part_017-L14
Wednesday, September 06, 2006
10:03:20 AM



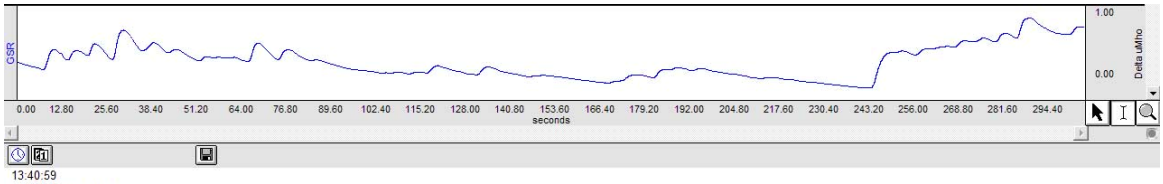
13:35:21
22 September 2006
Mean(42) = -0.481 Delta uMho StdDev(42) = 0.184 Delta uMho Max(42) = -0.186 Delta uMho Min(42) = -0.789 Delta uMho deltaT(42) = 60.230 sec
Mean(42) = -1.029 Delta uMho StdDev(42) = 0.071 Delta uMho Max(42) = -0.788 Delta uMho Min(42) = -1.116 Delta uMho deltaT(42) = 228.130 sec
Mean(42) = -1.101 Delta uMho StdDev(42) = 0.012 Delta uMho Max(42) = -1.052 Delta uMho Min(42) = -1.116 Delta uMho deltaT(42) = 60.220 sec
Lesson 14 - Biofeedback
File name: part_18-L14
Wednesday, September 06, 2006
11:14:51 AM



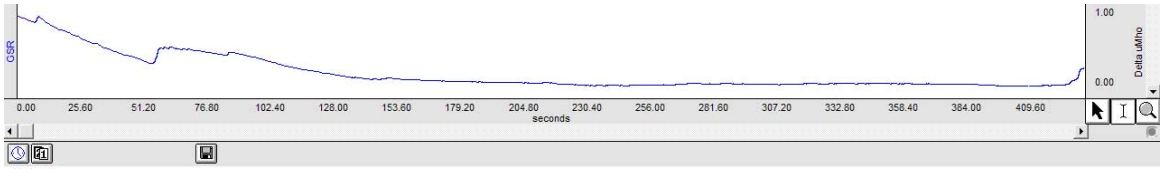
13:37:00
22 September 2006
Mean(42) = -0.121 Delta uMho StdDev(42) = 0.143 Delta uMho Max(42) = 0.238 Delta uMho Min(42) = -0.358 Delta uMho deltaT(42) = 60.150 sec
Mean(42) = -0.727 Delta uMho StdDev(42) = 0.339 Delta uMho Max(42) = -0.210 Delta uMho Min(42) = -1.374 Delta uMho deltaT(42) = 244.130 sec
Mean(42) = -1.355 Delta uMho StdDev(42) = 0.171 Delta uMho Max(42) = -0.676 Delta uMho Min(42) = -1.467 Delta uMho deltaT(42) = 60.530 sec
Lesson 14 - Biofeedback
File name: part_19-L14
Wednesday, September 06, 2006
01:19:33 PM



13:39:22
22 September 2006
Mean(42) = 0.907 Delta uMho StdDev(42) = 0.189 Delta uMho Max(42) = 1.352 Delta uMho Min(42) = 0.571 Delta uMho deltaT(42) = 60.420 sec
Mean(42) = -1.279 Delta uMho StdDev(42) = 1.443 Delta uMho Max(42) = 1.074 Delta uMho Min(42) = -3.730 Delta uMho deltaT(42) = 361.480 sec
Mean(42) = -2.837 Delta uMho StdDev(42) = 1.079 Delta uMho Max(42) = 0.725 Delta uMho Min(42) = -3.750 Delta uMho deltaT(42) = 60.930 sec
Lesson 14 - Biofeedback
File name: part_20-L14
Wednesday, September 06, 2006
01:41:59 PM

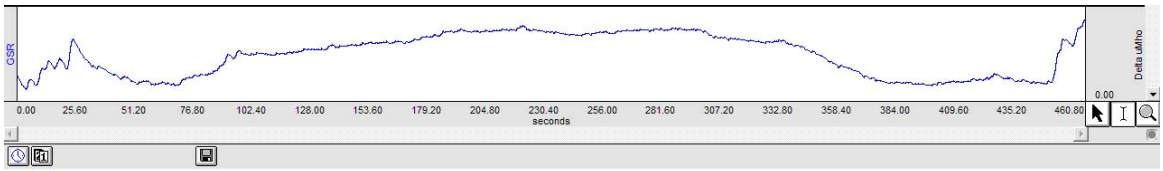


13:40:59
22 September 2006
Mean(42) = 0.353 Delta uMho StdDev(42) = 0.140 Delta uMho Max(42) = 0.727 Delta uMho Min(42) = 0.086 Delta uMho deltaT(42) = 60.290 sec
Mean(42) = 0.035 Delta uMho StdDev(42) = 0.151 Delta uMho Max(42) = 0.514 Delta uMho Min(42) = -0.229 Delta uMho deltaT(42) = 185.150 sec
Mean(42) = 0.549 Delta uMho StdDev(42) = 0.199 Delta uMho Max(42) = 0.925 Delta uMho Min(42) = -0.195 Delta uMho deltaT(42) = 60.610 sec
Lesson 14 - Biofeedback
File name: part_23-L14
Thursday, September 07, 2006
02:48:02 PM

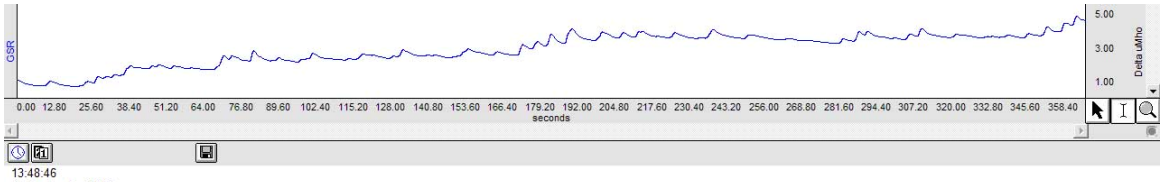


13:43:36
22 September 2006
Mean(42) = 0.606 Delta uMho StdDev(42) = 0.210 Delta uMho Max(42) = 0.955 Delta uMho Min(42) = 0.276 Delta uMho deltaT(42) = 60.160 sec
Mean(42) = 0.070 Delta uMho StdDev(42) = 0.156 Delta uMho Max(42) = 0.517 Delta uMho Min(42) = -0.051 Delta uMho deltaT(42) = 311.990 sec
Mean(42) = -0.024 Delta uMho StdDev(42) = 0.050 Delta uMho Max(42) = 0.211 Delta uMho Min(42) = -0.056 Delta uMho deltaT(42) = 60.150 sec

Lesson 14 - Biofeedback
File name: part_24-L14
Thursday, September 07, 2006
04:14:28 PM

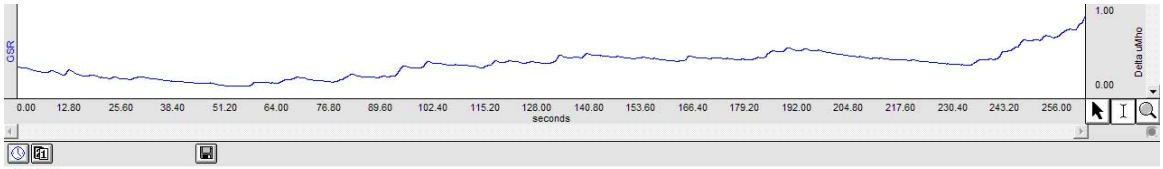


13:46:45
22 September 2006
Mean(42) = 0.102 Delta uMho StdDev(42) = 0.041 Delta uMho Max(42) = 0.215 Delta uMho Min(42) = 0.038 Delta uMho deltaT(42) = 60.040 sec
Mean(42) = 0.181 Delta uMho StdDev(42) = 0.065 Delta uMho Max(42) = 0.264 Delta uMho Min(42) = 0.051 Delta uMho deltaT(42) = 347.650 sec
Mean(42) = 0.101 Delta uMho StdDev(42) = 0.061 Delta uMho Max(42) = 0.287 Delta uMho Min(42) = 0.056 Delta uMho deltaT(42) = 60.030 sec
Lesson 14 - Biofeedback
File name: part_25-L14
Friday, September 08, 2006
10:42:46 AM

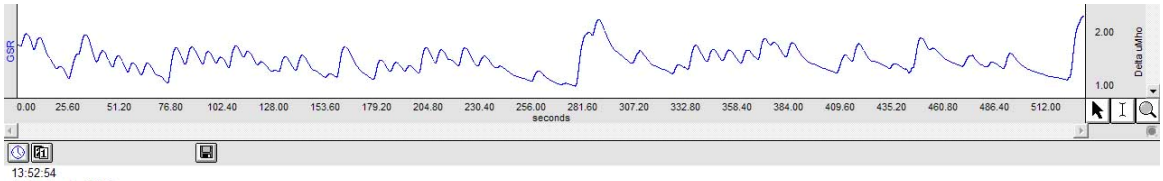


13:48:46
22 September 2006
Mean(42) = 1.378 Delta uMho StdDev(42) = 0.461 Delta uMho Max(42) = 2.078 Delta uMho Min(42) = 0.778 Delta uMho deltaT(41) = 60.090 sec
Mean(42) = 3.119 Delta uMho StdDev(42) = 0.629 Delta uMho Max(42) = 4.195 Delta uMho Min(42) = 1.759 Delta uMho deltaT(41) = 245.880 sec
Mean(42) = 3.921 Delta uMho StdDev(42) = 0.309 Delta uMho Max(42) = 4.936 Delta uMho Min(42) = 3.643 Delta uMho deltaT(41) = 60.870 sec

Lesson 14 - Biofeedback
File name: part_26-L14
Friday, September 08, 2006
01:45:48 PM



13:51:18
22 September 2006
Mean(42) = 0.084 Delta uMho StdDev(42) = 0.067 Delta uMho Max(42) = 0.235 Delta uMho Min(42) = -0.020 Delta uMho deltaT(42) = 60.230 sec
Mean(42) = 0.270 Delta uMho StdDev(42) = 0.120 Delta uMho Max(42) = 0.471 Delta uMho Min(42) = 0.023 Delta uMho deltaT(42) = 142.900 sec
Mean(42) = 0.408 Delta uMho StdDev(42) = 0.148 Delta uMho Max(42) = 0.868 Delta uMho Min(42) = 0.249 Delta uMho deltaT(42) = 60.220 sec
Lesson 14 - Biofeedback
File name: part_27-L14
Friday, September 08, 2006
03:51:00 PM



13:52:54
22 September 2006
Mean(42) = 1.580 Delta uMho StdDev(42) = 0.222 Delta uMho Max(42) = 1.986 Delta uMho Min(42) = 1.148 Delta uMho deltaT(42) = 60.260 sec
Mean(42) = 1.473 Delta uMho StdDev(42) = 0.217 Delta uMho Max(42) = 2.251 Delta uMho Min(42) = 0.999 Delta uMho deltaT(42) = 411.490 sec
Mean(42) = 1.428 Delta uMho StdDev(42) = 0.273 Delta uMho Max(42) = 2.321 Delta uMho Min(42) = 1.105 Delta uMho deltaT(42) = 60.250 sec
Lesson 14 - Biofeedback
File name: part_28-L14
Monday, September 11, 2006
11:18:44 AM

APPENDIX VIII:
PUBLISHED WORK

Appendix viii

A: Pixelraiders Conference

Sheffield Hallam University 2004

“Working with the Community using Digital Manipulation Software”

‘Working with the Community using Digital Manipulation Software’

Maggie Parker M.A. BA (Hons)
Researcher/Lecturer University of Teesside
SpIDERS Studio m.parker@tees.ac.uk

1.0 Introduction

This paper considers various emerging opportunities arising due to the growth of digital photography, and the introduction of digital manipulation software tools in the community and the community colleges’ function in facilitating the opportunities afforded in introducing new courses and creative ideas.

It looks at the problem of what to do for future growth after the unfamiliarity with computers the age group between 50 and above has been addressed, for example those produced by organisations including CLAIT [1], TROCN [2] and Learn Direct [3] have been delivered, and when students are familiar with word processing, using PowerPoint, and creating spreadsheets.

The effect this has had on the continuing growth of the community centre, educational implications of digital making and the natural progression of continuing feed through into higher education, and possible new business opportunities arising from skills gained in digital manipulation techniques.

It investigates the direction of the emerging growth of digital photography, and the introduction of digital manipulation tools, and explores how digital practices are being integrated into and are evolving from making processes in interaction within an ex-

mining community. It reviews the transformation past art history movements have had upon culture, and at emerging digital culture and the use of semiotics in the equating of meaning with content in the active process of interpretation, and how the digital workspace impacts on practice.

In particular it examines the skills gained by community users via the introduction of digital imaging software to the community at Shotton I.T. Resource Centre, and the role of the artist in creating and fostering new opportunities for further employment and business opportunities in the community.

2.0 Background

In Britain in 2000, 36 per cent of the population were aged between 15 and 59. [4] But in the next 20 years, that ratio will change, with the projection of the population aged between 50 and 70 due to become the highest number of people in England, increased by the huge baby-boom generation, born after the war, who are still in work. These 'baby boomers' will have retired and the plunging birth rate in many Western countries over the past 30 years means that there will be many fewer in work. In Britain, by 2040, nearly 21 per cent will be over 60 and less than a third between 15 and 59. [5]

What will the retired populace do with their retirement time? How will they use their time? After all their years spent working in various occupations, or even after a non-working life, what are the opportunities for gaining new skills and confidence?

Tanya Harrod [6] wrote, “there is huge potential for creative engagement beyond functionalism by artists and makers with an increasing range of software’s - starting with the ubiquitous PhotoShop” she also wrote that new media “optimistically identifies spaces of resistance and transformation - with new media offering mutable identities and unanticipated possibilities” “because it is un-anticipated possibilities that similarly abound in the ways in which artists and makers interact with new media.”

Looking at the availability of these software digital manipulation packages, what would be their place in the community in the future of retirement populace and leisure activities?

Shotton IT Resource Centre was opened in June 2000 by Shotton Partnership 2000, a voluntary organisation set up by local people to help regenerate the ex-mining village of Shotton Colliery. The Centre welcomes any people wishing to develop themselves through the medium of IT. It especially encourages usage from the residents of Shotton and from groups and individuals with particular needs.

The Centre houses ten computers, which are all Internet linked, and provides a comfortable, friendly environment for members’ learning and leisure. The staff consists of one full-time manager, two part-time support workers, together with a New Deal [7] placement and part-time volunteer helpers. The Centre offers a wide range of training opportunities, including Basic I.T., IBT2, Sage Accounts, Desktop Publishing, and Internet & Email courses. Digital photography and digital manipulation courses are also amongst the first in the country to be offered in this kind of venue.

At the moment, the ages of people using village community IT centre is between the age group 5 – 95, with the highest percentage being in the age range 45 – 70, [8] so what will the centres and colleges provide for these people when they have graduated from CLAIT, TROCN, LEARN DIRECT or other courses in word processing, PowerPoint, and spreadsheet document production, who do not wish to be employed, but want to fill their leisure time, and improve their computer skills deliver next?

2.1 Self-styled ‘Silver Surfers’ and easier access to education and technology, is encouraging Britain's older people to turn 'techie' and get their hands on other new technologies such as mobile phones. For example older IT enthusiasts are more likely to own a mobile phone if they already own a PC (77% compared to 68% of non users). They are also twice as likely to catch the texting bug along with their grandchildren. [9]

Affordability of cheap software and the introduction of lower priced digital cameras have encouraged people to experiment with new approaches to photography. When taking a digital picture, there is the option of downloading these digital images onto a computer, enabling manipulation of photographs to be considered.

Investigating some of the artwork being produced by these silver surfers is encouraging other older people to join in and embrace digital culture. The affordability of digital cameras, and the manipulation software provided with them, is enabling people to gain control of the images they produce. This is an opportunity many of these digital camera users are grasping with great enthusiasm.

Far seeing community IT managers realise they have to move to keep up with new developments in digital culture. To do this, they have to embrace new software and ideas being developed, also keep up with software development and the affordability of new digital items. Geoff Sphuler, manager of the IT centre in Shotton, County Durham was one of these managers, and encouraged the community to partake in the course I sought to deliver.

In my opinion, it is not enough to introduce clients to word processing packages only. With the range of digital devices being produced, we also need to address the training of using these increasingly complicated items, for example digital cameras. I introduced the notion of becoming 'all claited out' to my colleagues, and talked about what we would deliver in the community when many of the older age group courses were being aimed at had achieved all the certificates available to them. An ordinary person with access to a computer and basic manipulation software now has had the power to manipulate and influence a photograph, which would have normally been printed by a photographic process onto paper with no allowance of further involvement with the image.

3.0 Project

Some of the community centre's members had gone along to find out about these 'strange computing machines' their grandchildren had described to them, and having discovered word processing and the Internet wanted to progress and learn further software packages available to them. The age group of these people being in the ranges of 55 – 83 had the disposable income to afford to purchase digital cameras, and the leisure time to be able to learn how to use the equipment.

Thinking about this change and seeing how technology and software was becoming more and more readily available and affordable, and as a part of my view of how far the internet and modern technology such as digital cameras, scanners and printers would allow more people access to image making, I implemented an ‘Introduction to Digital Manipulation’ course, which was delivered to the community at the local IT centre, using digital manipulation software packages readily available.

This course was enabled by East Durham and Houghall Community College [10], who’s principal Ian W Prescott looked at the digital art work being created, and had the foresight to see that introducing an artist working with digital imaging would facilitate a new influx of users to the centre, providing a creative partnership to foster their learning of new technology, and foster links with the community college and help with the introduction of further courses to the community.

Writing the course ‘Digital Manipulation’ using the structure of taught elements, including PowerPoint demonstrations, and handouts, I followed and used traditional teaching methods, but, crucially, the students were allowed total freedom of expression and creativity. Demonstrating to them they could place a 3d object onto a scanner was a revelation for them, and at first this was a frightening experience, but with support and nurturing, they became more and more confident in looking at the world in a different way, and searching for their own way of expressing themselves.

Introducing the older members of the community how to scan by placing objects on a scanner bed, how to cut and paste how to move objects from one image to another, and

the availability and usage of the software's tools caused an enormous amount of interest from the centres users, introducing digital image making most of them had never thought about. This creativity enabled the students the opportunity of creating an image that was not representational, yet could still have value to them.

The images produced by these students with my instruction in the use of the technology and with my encouragement of their artistic development, generated a lot of publicity, was reported locally, and has brought disparate parts of our rural community closer together, forging links with various other groups and encouraging creativity, self esteem and confidence. After only 4 weeks of the 10 week course, they were so enthusiastic they inspired me to curate an exhibition, which was subsequently titled 'IT doesn't have to make sense', a comment by one of my students that came as a bolt of lightening to her development.

The students negotiated the date and a space for their exhibition, negotiated framing prices, hung their exhibition using tools and design skills including spatial recognition,

arranged for their publicity, and designed their own invitations. They also arranged for an opening night speaker to come along who was Dave Clarke [11], then the arts officer for Easington District Council. Seeing the success and the confidence engendered by the students, with the support from Shotton Partnership, the arts officer is now supporting negotiations with ISIS Arts director Clymene Christoforau regarding the possibilities of the inflatable portable digital artist's 'BIG M' being brought into the area as a venue for the further dissemination of digital art currently being made at the cutting edge of multi-media. A music festival and joint art exhibition is now being considered as a real possibility, further improving the potentiality of education and business opportunities. [12]

'Big M'
Image courtesy of ISIS Arts
www.isisarts.co.uk

The self-confidence obtained from my students in seeing their exhibition given credence by their peers, and the vocabulary they now possess to critique and evaluate work produced, has given them confidence in their abilities. It has given them even more encouragement to continue their own work despite thinking they could never become an artist unless they could draw a straight line. The course I am currently running is now looking at the future possibilities of using the skills obtained in the previous course to create new business opportunities. As an example, the students are now creating their own original Christmas Cards, which they intend to produce and sell at various Christmas fairs, raising money for their various charities, or even selling themselves to cover their printing costs.

One of the students, Ann Cook is now negotiating with a local art gallery owner to sell her original designs as limited edition prints, and as a range of art cards.

'IT doesn't have to make sense'
Original Digital Image by Ann Cook

Exhibition curated by Maggie Parker
East Durham & Houghall Community College, April 2003

Ann originally joined my course because she is an artist, and needed to find a course that would address her needs as well as be instructive.

'IT doesn't have to make sense'
Original Digital Image by Ann Cook
Exhibition curated by Maggie Parker
East Durham & Houghall Community College, April 2003

Another of the students is producing a calendar using original photographs taken of the village, which were then downloaded and manipulated by methods introduced to the students using skills obtained on the digital manipulation course. This calendar will be on sale in the community centre, with a percentage of the profits going back to the student.

Another positive event this course brought was an unexpected bonus. A couple of the students could not spell, but had managed to function in ordinary day to day life, however, not having to use much text on this course enabled them for the first time to be on a par with their text advantaged peers, imparting in them a confidence and dignity

previously denied, and offering an alternative expression of personality. They have now enrolled on the basic word processing course. Another two students have decided at their "ripe old age" 64 and 60, to enrol at the local art college to further pursue digital techniques.

'IT doesn't have to make sense'
Exhibiting artists' digital images
Exhibition curated by Maggie Parker
East Durham & Houghall Community College, April 2003

3.1 In facilitating this course, tapping into digital culture has its detractors. The Renaissance, the Impressionists, and Abstract Expressionism are some of the few art movements that did challenge our perception of art and what it means to create art. Many art movements have tapped into the zeitgeist of the times, including Abstract Expressionism, and impressionism, which is perhaps the best known and best loved of all artistic styles, celebrated for its bright colour and fresh, informal vision of the world. However, in its original context, in Paris in the 1870s, this art was viewed as provocative and controversial; it was considered to threaten the values that fine art was meant to uphold.

Critics at the time welcomed their initiative (Impressionists) in organising their own exhibitions, but their paintings were harshly criticised. The main focus of this criticism was their technique; the visible brushwork made their canvases appear crude and

unfinished, and their colour appeared exaggerated and unnatural. At the same time, the subjects they chose were considered unworthy and unsuitable for fine art, since they focused on the most ephemeral and seemingly trivial aspects of the modern world, rather than treating scenes of natural beauty or moral significance. Looking at the history of Impressionism makes us realise how tastes change, and that an art that we, today, can readily enjoy and appreciate could seem crude and provocative to its first viewers.

‘IT doesn’t have to make sense’
Original Digital Image by John Fishwick
Exhibition curated by Maggie Parker
East Durham & Houghall Community College, April 2003

From the point-of-view of this digital art practitioner, [13] “it seems evident that various web/net/code artists are more likely to be accepted into an academic reification circuit/traditional art market if they produce works that reflect a traditional craft-worker positioning. This "craft" orientation (producing skilled/practically inclined output, rather than placing adequate emphasis on the conceptual or ephemeral aspects of a networked, or code/software-based, medium) is embraced and replicated by artists who create finished, marketable, tangible objects; read: work that slots nicely into a capitalistic framework where products/objects are commodified and hence equated with substantiated

worth." "Digital art and digital information exists and yet fails to meet the ontological criteria we have for most objects. An analysis of our experience of digital information would assist in evolving concepts to conceptualise a human-digital relationship which can acknowledge strangeness without preventing meaningful engagement." [14]

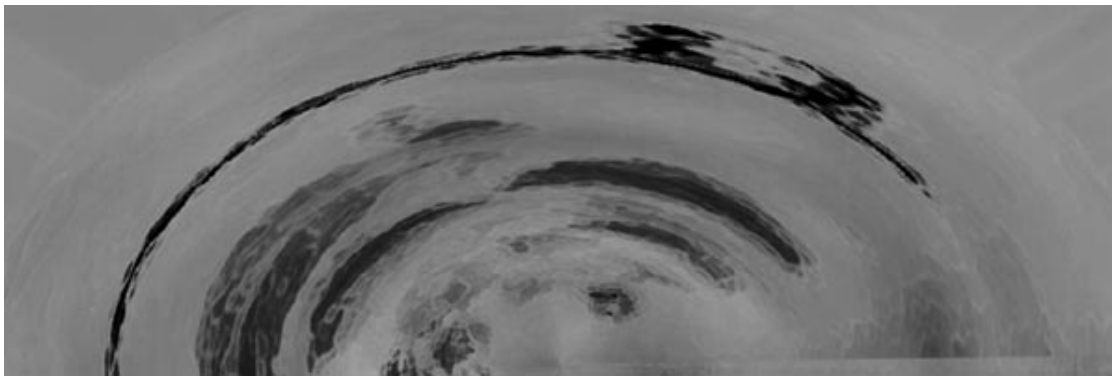
Semiotics makes us aware that the cultural values with which we make sense of the world are a tissue of conventions that have been handed down from generation to generation by the members of the culture of which we are a part. It reminds us that there is nothing 'natural' about our values; they are social constructs that not only vary enormously in the course of time but also differ radically from culture to culture. (Cited in Schroeder 1998, 225) [15]

As an approach to communication, which focuses on meaning and interpretation, semiotics challenges the reductive transmission model, which equates meaning with 'message' (or content). Signs do not just 'convey' meanings, but constitute a medium in which meanings are constructed. Semiotics helps us to realise that meaning is not passively absorbed but arises only in the active process of interpretation.

In producing this work, for the first time these students placed images on a wall for perusal by their peers, maybe it isn't cutting edge fine art Turner Prize material, using the various filters available in the software package would be frowned upon by art directors producing sophisticated artwork for magazine or graphic image production.

Digital Images
Various Artists [16]

But these students are using their own creative ideas, and their life experiences to produce something meaningful to them. It has given these students a sense of confidence, a sense of belonging, and a sense of community, that they previously did not think they had. It has also encouraged some of them to think that they may be still able to contribute to society even though they are retired. In facilitating these ideas, I was asked if this was not just an exercise in making 'real' artists feel good and get paid, and in addressing this question I directed the questioner to the very real and positive results gained by this project.



'IT doesn't have to make sense'
Original Digital Image by Tom Sample
Exhibition curated by Maggie Parker
East Durham & Houghall Community College, April 2003

3.2 Editor Gillian Nichols [17] says, "In today's climate artists need to think outside of past and current expectations and cultural conditioning, to establish their own notions of success, set their own goals and be rigorously determined about the direction they are travelling. Crucially artists can access existing networks or create their own, combating the sense of isolation that many artists, both rural and urban, have experienced" this is also the case in rural communities, giving confidence to disadvantaged members of these communities, creating a new faith in their abilities. "Challenging existing modes and structures of thinking"

Support for artists using new technologies is increasingly linked to the revenue-generating or commercial potential of their proposed projects. On the other hand, artists have a history with images and are able to construct meaning in representational systems based on considerable experience with the social relevance of image and perception. This is the power that lies with artists, which is ever-increasing as the image acquires new currency in mass culture. Artists working in this domain are re-negotiating their positions through constantly re-worked aesthetic strategies that relate to the art world and beyond.

What is the artist's role precisely in these communities? The creativity artists bring to these to various communities, "…demonstrates the broad contribution artists make to society, although it still seems to surprise some within the art world that artists are capable of flexibility and diversity of role. Artists can challenge stereotypes and change attitudes. Collaboration with doctors, scientists, architects and other professionals is gaining artists' respectability in other fields and increasing their capacity to negotiate creative partnerships in these areas. At times boundaries meld, notions of the individual artist dissolve and definitions become less relevant."

Artists who have embraced the 'digital culture' are able to transfer their skills, initiating and supporting local communities, establishing artistic practices hitherto unknown in outlying areas, continuing in further integration of the arts into a hitherto excluded part of our population. "Increasingly advanced and affordable, technology presents vast opportunities as well as some challenges for artists, impacting on their ……arena of engagement. The mobile phone, laptop, and remote Internet access mean artists are no longer tied to one particular base. This allows freedom to operate across a wide geographical area and increases the artists ability to earn a living from their practice and related activities, gain the enhanced profile that comes with operating outside their region of residence…. allowing practice to continue more or less smoothly"

4.0 Conclusion

There is a notorious lack of employment for emerging graduate art students, many of them going into other careers as a result, but another of the successes of these digital

manipulation courses is the possibility of employment of these graduate digital artists coming and working in the community centres and colleges, thus providing employment, and not losing their talents to other industries.

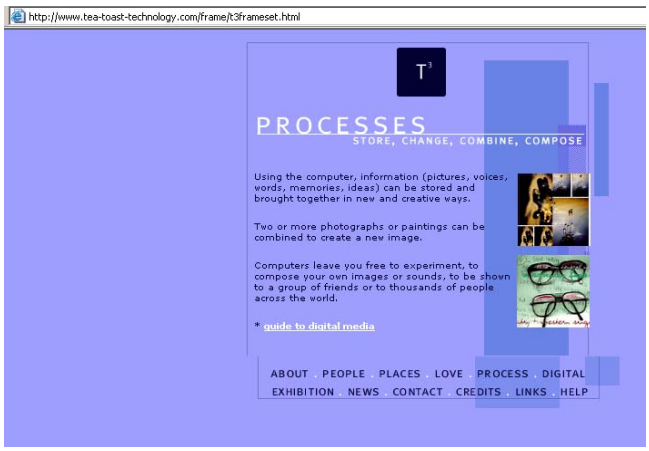
Experience gained by artist interacting with the digital culture and new technology have given artists the opportunity to enhance their working practices, using new media techniques but also now to become an integral part of their community, previously working in exclusion, they are able to inter change ideas via the web, or e mail, or as shown here, by exchanging their skills within their own community.

This can only be good for both community centres and also colleges with the relevant software installed, due to the new ideas generated and introduced by artists, there would be a natural progression feeding through from the free introductory courses offered in the community, to the longer, certificate led college courses. However, even if the mature students would not want to go that route, having already obtained all the certificates and qualifications they will ever need, they still have the option of combining as part of a group working in a creative way co-operatively producing new pieces of their art, possibly with the support and facilitation by the community colleges.

The students have combined their new skills and have continued to meet weekly to work and encourage each other together in learning more about image manipulation and the general feeling is looking towards the future of digital productions. Some of the many possibilities that this project have led to include the possibility of producing a video diary of the older members of the village, which would be facilitated by the community centre using the digital skills gained, a book project, younger peoples views on their

environment, and their involvement within the community, a photo archive of the village, to be sold as a CD rom, with the technical support and encouragement, from the community centre. They have also expressed a wish to make their own web sites after looking at other web sites while researching the Internet looking for examples of digital art.

4.1 Another artist working in the community with digital media was artist Jeanie Finlay via the website www.tea-toast-technology.com [18]



Shotton IT centre's older members are beginning to experiment with the future possibilities of digital photography and image manipulation. They are now asking about the feasibility of producing a web site, and giving talks to the other villages telling them of the opportunities in using digital media of recording and disseminating their particular experiences. Linking up with other communities in different countries and exchanging images and life experiences is also being proposed, as our village has links with partnerships in Norway, Ireland and France. These ideas are all currently being negotiated with the community college for courses to be implemented shortly. Viewing

the tea-toast-technology web site, the students were inspired to produce their own web pages, which are currently being created at the centre.

The exhibition I curated ‘IT doesn’t have to make sense’ has also led to me being asked to introduce digital manipulation into two other community centres, thus becoming a victim of my success, as now I haven’t the time to teach all the courses the centres want to implement. This is giving other artists with a different way of working and different technical skills a chance of employment and introducing the students to another artistic view. “The future is a place most of us want to be, so we try our hardest to get there. Whether it be the explosive growth of the Internet, or the widespread adoption of cell phones, there has been a greater openness to new technology than probably any other time in history.” [19] "There is something regenerative about digital technology," says Kit Monkman of York's Sight Sonic festival. [20]

Tanya Harrod states that the digital medium “optimistically identifies spaces of resistance and transformation - with new media offering mutable identities and unanticipated possibilities, because it is un-anticipated possibilities that similarly abound in the ways in which artists and makers interact with new media.”

There needs to be a sea change in attitudes to art and its role in the community, and a new approach to art and digital culture. Future courses could include web design and web art, and even computer animation. Managers who embrace this new digital culture will survive in the community as more and more grants are becoming unavailable, community IT centres are going to have to learn how to keep their clientele.

However, I would argue there is a danger of this flood of creativity becoming more and more constrained and prescribed, in producing new booklets and courses, there are dangers that these courses will not give them students freedom of expression. In becoming facilitators, there is a real danger of artists becoming censors, so we must remain objective in our views, and not become dictators, to ensure this new attentiveness of the cyberspace around us is not suppressed.

Acknowledgements

I would like to thank Dr Clive Fencott for his helpful discussion in writing this text, and to the contributions and support from colleagues at Shotton IT centre.

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[1] OCRs Computer Literacy and Information Technology
http://www.clait.org.uk/

[2} Open College Network
www.trocn.co.uk

[3] Government-supported initiative with computer-based courses designed to enhance business skills and to offer increased employment opportunities.
www.learndirect.co.uk

[4] Polly Toynbee 'Making it easier to be a mother' Wednesday September 24, 2003 The Guardian
p.toynbee@guardian.co.uk

[5] BRONWEN MADDOX
Ageing baby
boomers leave
time bomb at the
heart of Europe
October 07, 2003 Times
Online

[6] Tanya Harrod The applied arts and the politics and poetics of digital technology'
http://www.pixelraiders.org

[7] New Deal is a key part of the Government's strategy to get people back to work. It gives people on benefits the help and support they need to look for work, including training and job preparation.

http://www.newdeal.gov.uk/

[8] Other centres figures show similar age ranges

[9] http://www.ageconcern.org.uk/AgeConcern/news_584.htm

[10] http://www.edhcc.ac.uk/AboutCollege.asp

[11] Post now held by Kevin Edwards

[12] Stall to promote courses and to sell cards and calendars for the community centre, Shotton

[13] Mez Breeze Inappropriate Format][ing][: Craft-Orientation vs. Networked Content[s] Sydney, Australia
http://jodi.ecs.soton.ac.uk/Articles/v03/i03/Breeze/craft_or_network.html

[14] Jenny Weight Futurology RMIT University, Melbourne
http://jodi.ecs.soton.ac.uk/Articles/v03/i03/Weight/futurology.html

[15] http://www.aber.ac.uk/media/Documents/S4B/sem10.html

[16] John Fishwick, Ann Cook, Tom Sample, Muriel Cummings, Thelma Burnhope

[17] [a-n] FOR ARTISTS Gillian Nichol [a-n] editor ‘Cultural Condition’ March 2003 Print Scottish County Press

[18] Date: Tue, 07 Oct 2003 12:36:03 +0100 Dear Maggie
Thanks for your email. My name's Jeanie Finlay and I was the lead artist for Tea-Toast-Technology. You have my permission to use a screen shot of the site.
www.tea-toast-technology.com

[19] Donald Melanson The New Future With additional commentary and insight from Douglas Rushkoff, author of Coercion and Media Virus.

[20] http://www.mindjack.com/feature/future.html

Appendix viii

B: Women in Games Conference

University of Portsmouth 2004

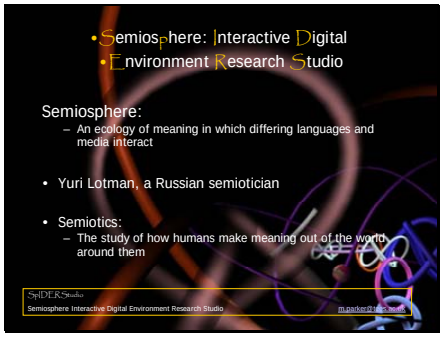
“Alert and Ready to Defend”

‘Alert and Ready to Defend’-Presentation

Slide 1

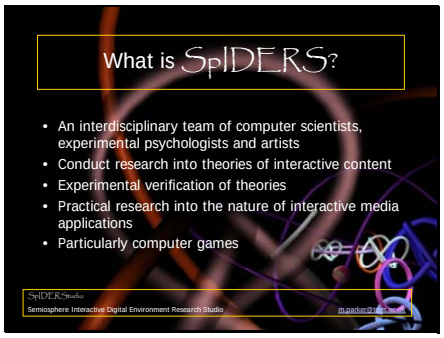
Introduction

Slide 2



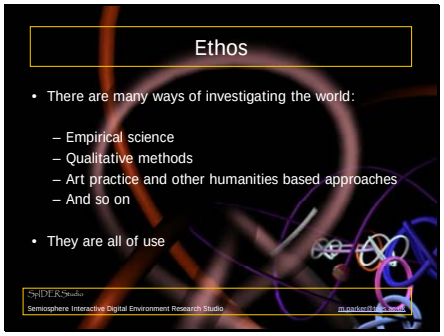
Thinking in 'ecological' terms about the interaction of different semiotic structures and languages led the Russian cultural semiotician Yuri Lotman to coin the term 'semiosphere' to refer to 'the whole semiotic space of the culture in question' (Lotman 1990, 124-125). The concept is related to ecologists' references to 'the biosphere' and perhaps to cultural theorists' references to the public and private spheres, but most reminiscent of Teilhard de Chardin's notion (dating back to 1949) of the 'noosphere' - the domain in which mind is exercised.
an 'aesthetic of identity' with a common ideal, a work uses the forces of similarity, repetition, rhythm that even the Western consumer may take for granted in the enjoyment of a song or other piece of music, a type of writing (from novel to newspaper article), a performance, or a work of the visual arts.
In an 'aesthetic of difference', the artist uses forces of dissonance and discontinuity, establishing the difference between this work and all others. This is the dominant aesthetic in contemporary consumerism with its cult of the unique art work and of the individual author.

Slide 3



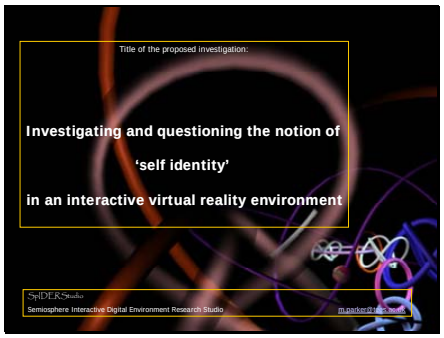
An interdisciplinary team of computer scientists, experimental psychologists and artists
Conduct research into theories of interactive content
Experimental verification of theories
Practical research into the nature of interactive media applications
Particularly computer games
Clive Fencott Paul Van Schaik Philip
Links with Gotland University
Animex Games, links with Games companies including Bratt, Eutechnyx, Blitz Games
Uses eye tracker equipment to detect eye motion

Slide 4



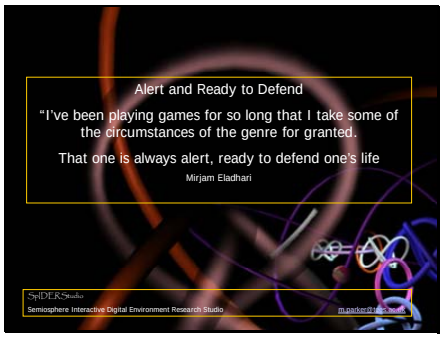
Using both artistic and empirical methods of analysis and development

Slide 5



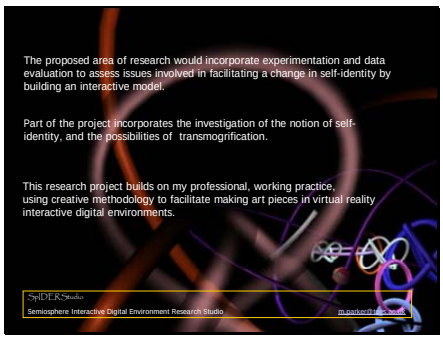
This research project builds on my professional, working practice, using creative methodology to facilitate making art pieces in virtual reality interactive digital environments.

Slide 6



Alert and Ready to Defend
"I've been playing games for so long that I take some of the circumstances of the genre for granted.
That one is always alert, ready to defend one's life
Mirjam Eladhari

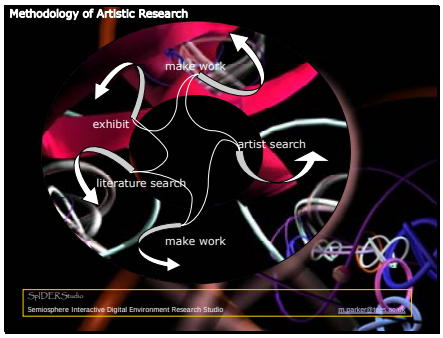
Slide 7



The proposed area of research would incorporate experimentation and data evaluation to assess issues involved in facilitating a change in self-identity by building an interactive model.
Part of the project incorporates the investigation of the notion of self-identity, and the possibilities of transmogrification.

This research project builds on my professional, working practice, using creative methodology to facilitate making art pieces in virtual reality Interactive digital environments.

Slide 8



Slide 9

Char Davies Epheme Osmose
Charles Csuri
Jane Prophet

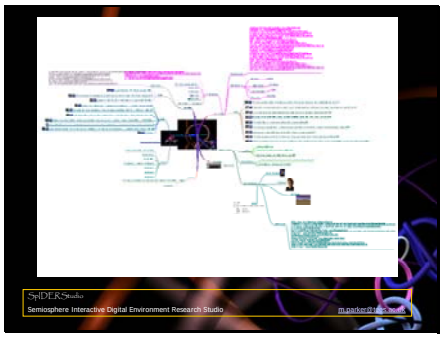
Slide 10

Ramachandran theories of patterning brain research

Slide 11

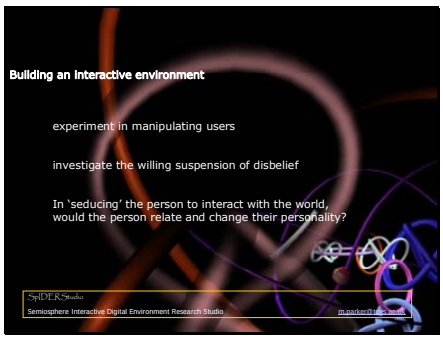
Perceptive Opportunities

Slide 12



This is my research as an artist, approaching this subject of self identity in a lateral, widely embracing field of view

Slide 13

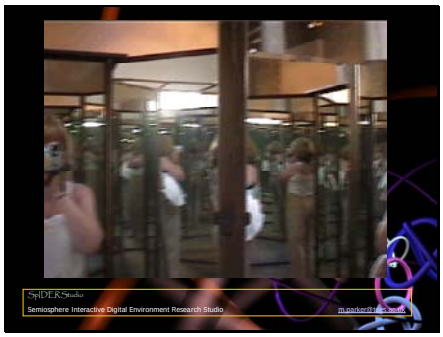


Would lead to experimenting within the aware and the unaware, presence and immersion happenings taking place between cyberspace and the 'real time' person operating the equipment.

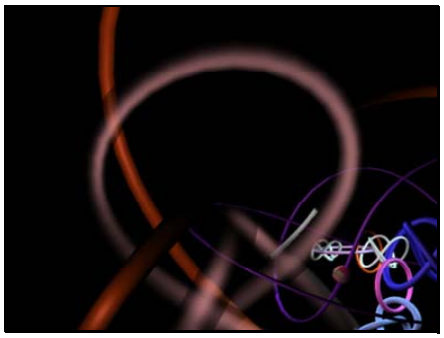
For example, when working as an artist, one would attempt to interpret reality by appropriating gaming metaphors, design principles, or core technologies for alternative kinds of art-related content creating abstract situations within a cyber landscape enabling engagement with the user.

To become a completely disembodied intellectual fabrication, leading to identity becoming fluid and ephemeral, even to change personality and character. *(Davis, 1995; Featherstone et al; 1996;)*

Slide 14

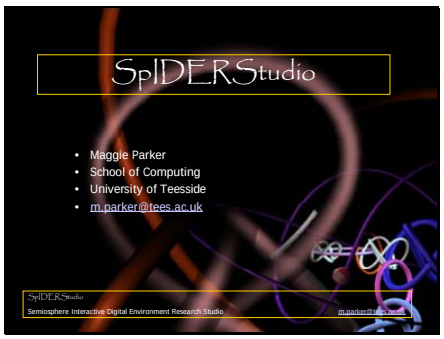


Slide 15



Talk about my environment
Add meditation influences

Slide 16



Appendix viii

C: Senior Fellow, Digital City

University of Teesside, Middlesbrough 2004-2005

Digital City Fellows Exhibition Catalogue

‘Star World’

"We are all in the gutter, but some of us are looking at the stars." (Oscar Wilde)

Breathe in life.
Without this breath the dust can never be more than dirt

Breathe in

Breathe out

Breathe in, and hold your breath. Hold it for too long, and you will return to dust. But hold it for a while, and think. And then breathe again

In

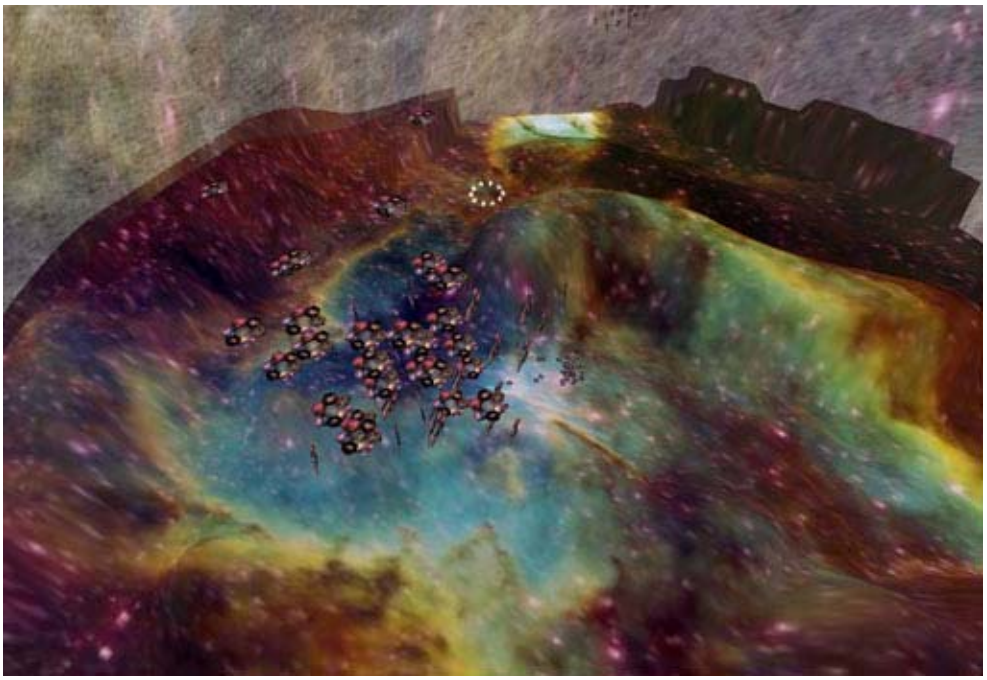
Out

Give

Receive

Move

Rest

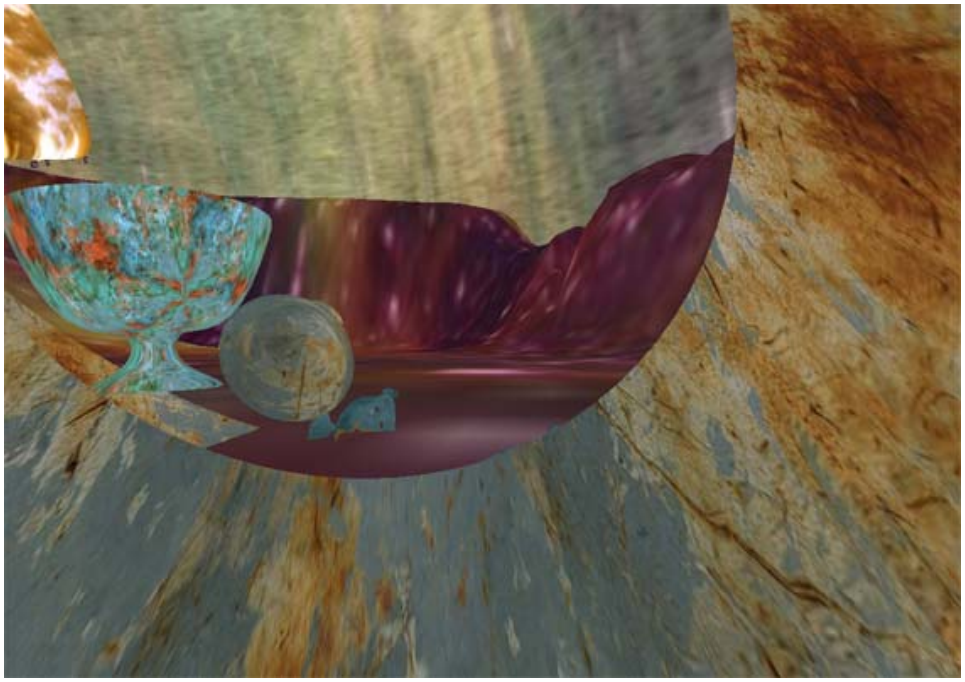


In my virtual world, you can literally ‘walk’ on the stars. Taking your place in the environment I have created as Senior Digital ‘Fellow’ at Digital City. This fellowship has given me the space, time and opportunity to create a virtual environment where you may go to and meditate and have some time to relax.

It is built – not to shot and kill, available in fantasy games - but to breathe and relax in an easy to navigate, virtual piece named ‘Star World’. There is a huge variety of excellent games out there begging to be played, with room for new genres to emerge. Our lives can become the real medium for play; engagement of our emotions with this ‘game’ will not be about shooting virtual robots or chasing imaginary VR bio-zombies. Games could actually change our lives and our world for the better, physically or spiritually.

In seducing the ‘player’ to interact with ‘Star World’ world, I am interpreting reality by appropriating gaming metaphors, design principles, and architectural technologies for alternative kinds of art-related content, creating abstract situations within a cyber landscape enabling engagement with the user.

Cyberspace for me is a window through which I can see a meditation world rendered more sharply defined, isolated and specific. Where things may have a different hierarchy of importance than they do in the experiences of everyday life, or the casual glance. I found in my discovery of digital imagery, a form that had immediacy and a directness that enabled me to develop a tangible and creative contact with the world. Cyberspace, therefore, broadens my vision both metaphorically and literally, the magic of discovery was no longer dominated by my imagination alone or the limitations of a style haunted by past art. I am now much more of an explorer than I was before, in the literal sense. The monitors’ screen becoming a platform through which I explore a world filled with endless possibilities.



Many of the most influential arts movements in the past century – for example Dada, Surrealism, and so many others - arguably, were all playing games of one genre or another.

As an artist, I wish to create a new playscape space to play a ’meditation’ game.

In my "veduta ideata", ‘Star World’ is a realistically conceived scene that contains wholly imaginary elements. Star maps are textured onto a displacement mapped twig landscape, producing stars wrapped around the bark of trees. Hand made paper scanned in and reproduced digitally becomes a rotating inner sphere, a real world item transformed into a mythical landscape. Slow moving animations create a hypnotic feast for the eyes; the

stuff in the digital landscape may not exist, but the spirit of the artefacts exists in the space.

There are few rules to learn in negotiating this space, and very simple controls, move slowly, take your time, enjoy, and relax being the few. There is no avatar represented for you to 'become'; you can image yourself in any guise. The players' role is to become relaxed, safe, de-stressed, quiet, and peaceful. The game structure is a simple landscape with few core mechanics, animations, sound and textures. All players can win if they wish. The physical challenge is timing and rhythm, the exploration challenge becomes negotiating illogical spaces.

There is an economic challenge to achieve balance and care for you. Conceptual challenge is the understanding of something new, deduction, observation, and interpretation of this space. The game worlds' mental space is a space that is not-the-real-world, and it is entered by choosing to play. The fantasy environment of the game world setting helps the entertainment, contributes to immersion and fantasy and means it needs to be looked at more with time spent in the world.

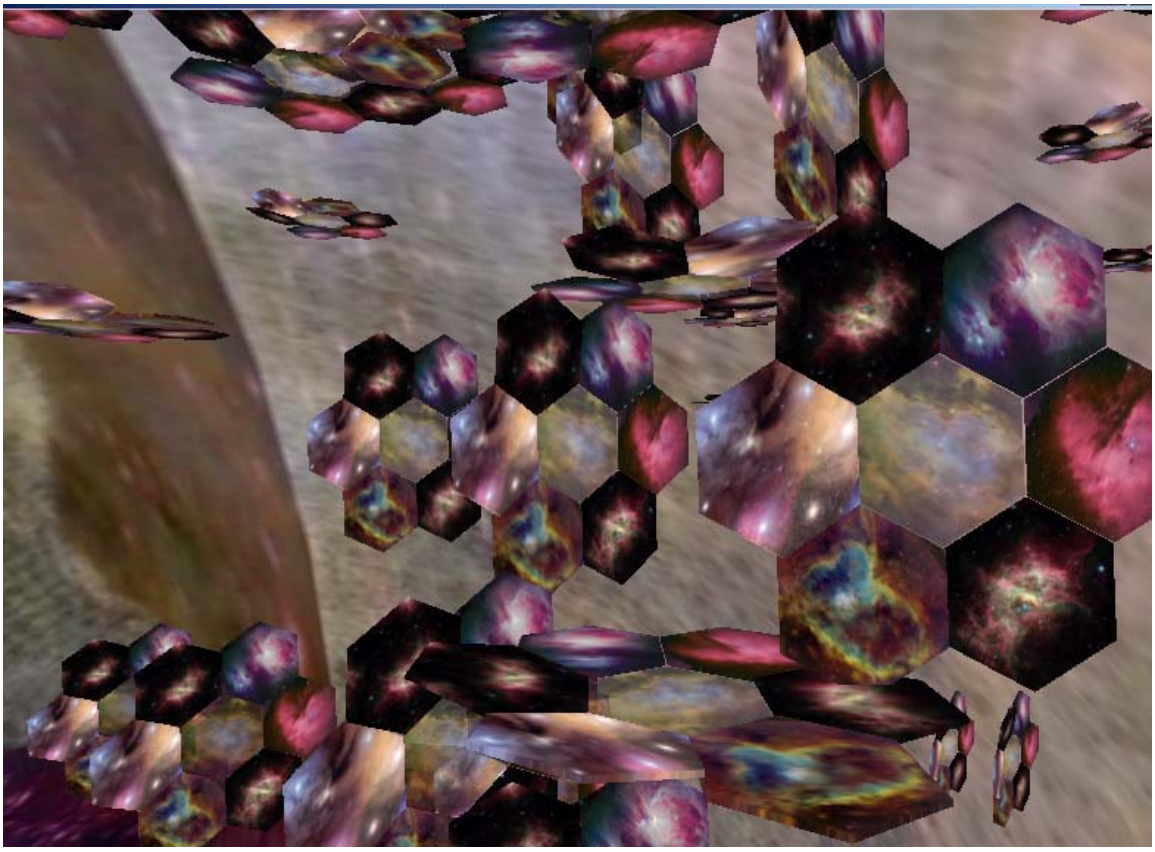
The scale of the physical dimension in the world is literally the size of the Earth, using the measurements of the Earths' circumference; the world is built using real world measurements. When moving through the world, the size of 'you' is tiny in comparison to the scale of the world; you become a miniscule pixel in a massive world. Navigation through artefacts means the possibility of interfacing with an unreality, not allowed in the real world, seeing an object from a different perspective.

Creating this space causes semiotics structures and a 'code of interaction' to activate a private mind-space, activating meaning in structures in this space. Semiotics is based on a very simple, yet fundamental, yet general notion of a sign that applies to anything that can have meaning for us, either • the signifier-the physical thing in the world that you can perceive, or • the signified-the meaning, in your mind, that you associate with the physical signifier, making a link between the real world and the world of our individual minds and imaginations. The signifier can be anything we can come to be aware of in the world around us: it can be words, images, textures and structures.

In a perceptual snapshot of the signs on offer and their overall meanings suggests to the player, or in other words - connotes, a different relationship that s/he desires and tries to achieve; in turn this results in the construction of a different relationship out of the many that were possible; one that may or may not resemble the one desired, or thought of by the creator.

The boundary at the end of the world is the rotating sphere, creating a temporal dimension in which time becomes meaningless, the player 'going with the flow'. The physical surroundings consist of a terrain, a sphere, animations and sculptures. The player can perceive either a small part of the world, or, if s/he chooses, has the option of navigation to a vantage point at the top of the world to discern their spatial positioning.

This world is created using abstractions, taking place in an unfamiliar world, however, representational knowledge of the real world is used to create navigation, for example to negotiate the controls to turn left, hit the left cursor key. Navigation is also possible by sound direction, clues to other areas being heard and giving intimations of direction. There are a series of puzzles that advance a plot, e.g. find the sound and relax, find the sky and watch it, the player remaining in full control at all times of where s/he wants to go.



Considering all the rhetoric that has been produced about information technologies and their impact on global culture, it's easy to feel exhausted, or at the very least tired, by the prospect of more discourse, some people are stressed, tired and depressed, and some are looking for something to relax with that is not a chemical substance. The ease and pace of navigation through this world is aimed at older people, not hard core game players, and therapists working in alternative practices, giving their patients a space to relax in.

Holding one's breath and being centred in balance opens up a profound way of relating to the world. According to some figures, it is believed that stress related disorders affect 80% of the population. Relaxation and meditation techniques offer deep breathing, nose-breathing focus, positive affirmations and other techniques to bring the body and mind into a state of calm. More energy, calmer disposition, more control, clearer thinking, improved memory, increased productivity, and enhanced creativity being some of the benefits gained from regular meditation.

Cyberspace has the ability to evoke a depth of vision that some may describe as spiritual and a sensibility that somehow transcends the cold harshness of the real world, inducing visual and auditory imagination, provoking dramatic imagination, awakening conceptual imagination, and instigating lateral thinking. Players can gain greater insight into their perceptions, reactions and behaviours in life, and do not have to feel guilty about including a period of relaxation every day.

"*We are stardust filled with breath, sometimes you have to lie in the grass to see the stars"*

Appendix viii

D: Playful Subjects Conference

University of Bristol 2005

Invited Artist

playful subjects

The Play Research Group, School of Cultural Studies
University of the West of England
invite you to a symposium on technology, agency and computer games

Spike Island, 133 Cumberland Road, Bristol BS1 6UX

Friday 13th & Saturday 14th May

Who or what is at play in computer games?

Computer game play is at once an intense media experience of interaction with flows of images, sound and action, and a cybernetic feedback loop between software, hardware, bodies and brains. The common experiences of compulsion and immersion that characterise computer game play have yet to be adequately theorised: what are the distinct pleasures (and anxieties) engendered through play with computers? How can we theorise agency in these technological networks and gameworlds animated by artificial life, virtual physics and computer-controlled entities as well as human players?

This symposium will address computer games, computer game play, and computer game players as analytically inseparable. What questions does this raise for the study of computer games as popular media texts or events; for theories of spectatorship and subjectivity in film and media studies or agency in the study of technoculture; for our understanding of distinctions between the human and the technological?

How can we theorise the intimate relationships between the human, the textual, the ludic, and the technological in the act of gameplay?

Invited speakers:

Barry Atkins
Diane Carr
Patrick Crogan
Jon Dovey
Graeme Kirkpatrick
Tanya Krzywinska
Caroline Pelletier
T.L.Taylor

The artists
John Paul Bichard
and Maggie Parker will present
and discuss their work

also presenting:

Janice Denegri-Knott
Shanly Dixon
Stella Downey
Mark Eyles
Seth Giddings
Raiford Guins
Helen Kennedy
Geoff King
Ewan Kirkland
Mike Molesworth
Mark Paterson
Greg Singh
Sandra Weber
John Wilson

DiGRA Futures
getting to Spike Island
programme
presenters and abstracts
registration
accommodation
download a poster
game studies, play research & new media at UWE

Appendix viii

E: Women in Games Conference

University of Dundee 2005

“Veduta Ideata”

‘Veduta Ideata’

Maggie Parker

University of Teesside

m.parker@tees.ac.uk

Introduction

What will happen to the future development and production of games? Old black and white films conversion to colour and sound produced a more discerning and sophisticated audience, leading to experimentation with sounds and imagery on video production becoming mainstream and available to the general public.

Game modding creates new levels and introduces new ways of ‘seeing’ and imagining the virtual space used by game players, graphic cards produce better and better representations of reality, AI engines become more and more sophisticated with better game physics creating real world reactions, but are all these improvements increasing the level of engagement that game players traditionally have with their games? There is beginning to be a rigorous investigation analysing the structure and content of computer games, their impact on the psychology of the genre, their uses for education and the technical aspects of the formation and building of games.

Is there another way to achieve loss of ‘self identity’ than the mechanism that is traditionally engaged in traditional shoot ‘em ups, beat ‘em ups and role playing games. These games are more normally action/adventure games where the player is in a heightened state of awareness. Using alternative emotional pathways to investigate whether a deeper state of immersion and loss of ‘self identity’ could be achieved using artistic practice and methodology to create an alternative environment, is a technique to test and assess these notions.

It could be argued that artists have traditionally played games since even before the Dada Art Movement, and this paper is investigating the possibility of creating a mechanism whereby immersion and changes in ‘self identity’ using artistic practices and software technologies could be used to examine the possibilities of alternative game production.

Incorporating experimentation and data evaluation to assess issues involved in facilitating a change in self-identity, would give this exploration an added depth for further investigation to proceed by investigating the use of artistic practice to compare an art based approach with a semiotic model investigation into the exploration of the “willing suspension of self identity” as opposed to the ‘willing suspension of disbelief’ (Coleridge, 1817)

Using a semiotic approach would identify the historical and cultural forces moulding these sensorally elaborated "signs." (Chandler, 1998)

Background History

Janet Murray, (1997) observes that media go through identifiable phases of evolution before their nature and therefore their effective application can be understood. Using the evolution of the printed book as an example she lists the following phases of evolution:

> Embryonic
>
> Incunabula Technology exists but is only partially understood.
>
> Fully fledged

Incunabulum is the stage I believe the game world creative and artistic makers are at the moment.

The technology and 3d design packages used by the games industry are so expensive, they have not been widely

and readily available to other creatives however, the introduction of more reasonable priced software packages is addressing this problem. Artists are able to subvert software by 'modding' games levels, with the artist changing a functional or aesthetic element in an existing game

Artistic Manipulation

In the mid-90s Doom offered many their first glimpse at what players could do to extend the life of a game. First person shooters continued to be a major focus for modders as the Quake (ID Software) and Half-Life (Valve, 2006) franchises gained immense popularity. The Counter Strike modification for Half-Life brought the most hesitant developer to the realization that modding was a reality, even an opportunity, that couldn't be ignored.

Fans of Role Playing Games have been graced with moddables to work with as well. Two big names in the last few years are Neverwinter Nights (Planet Never Winter) and Morrowind. Sites like Morrowind Summit (Morrowwind) and Neverwinter Vault house tons of material for those who finished the games and want more.

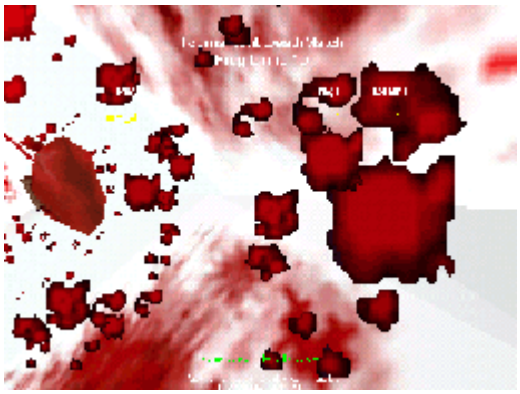
People are creating their own versions of games that have other messages to disseminate throughout the inter-net. Creating meandering wanderings around a virtual universe to create a story unique to themselves, subliminally affecting 'mind' and 'self' "Finding other paths from darkened bedrooms into a bright new world in voracious pursuit of new games and roles to play"

What can we do when playing games? Just a few things we can do -

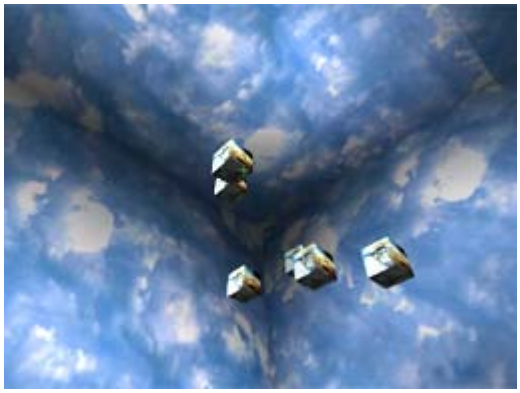
- Command armies
- Rule Worlds
- Change identities
- Navigate through unfamiliar territory
- Shoot, maim and kill 'people'
- Build cities
- Solve puzzles

Artist's Games

But games can be used to do and create other meanings:-



Screenshot (Engeli, 2003)



Screenshot

Screenshot

Arctangent
by REAS <www.groupc.net>

Move the mouse to change the direction of the eyes. The atan2() function computes the angle from each eye to the cursor.

Created 1 September 2002
Updated 6 July 2004

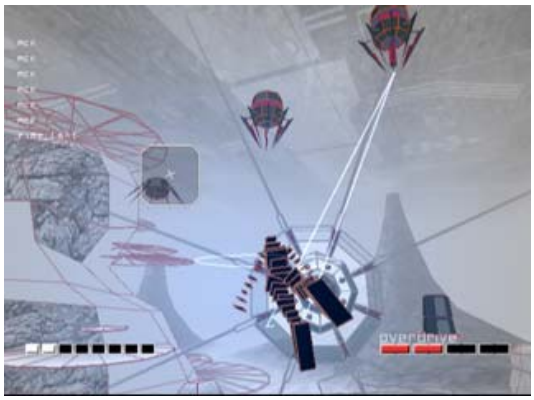
Screenshot (Processing)

From the coding web site of Casey Reas, these 'games' are creating new ways to interact with the user. This image is made using freeware readily available used to create and alter parameters to interact with mouse over's.

Tetsuya Mizuguchi, game developer, created the game "Rez" whose aesthetic levels were derived from the synesthesia school of artists, painters, and composers, and painterly aesthetic of Kandinsky. In "Rez" we find a music shooter that immerses you into a cyber world. Contained in this virtual world are:-

- Sounds
- Visual Images
- Brilliant colours
- Innovative designs
- Vibrations

The incredible cyber visuals look simply astonishing and work in conjunction with the driving music to creating an intense feel that makes you feel like you're inside a living mainframe. This can become overwhelming, causing a bit of sensory overload at points, with dozens of objects flying at you at once.



Screenshot from Rez

Lauria (1997) has this to say about games of this kind "these game have the potential to transcend properties like continuity, and causality through the creation of…virtual space where all elements function to create meaning beyond their separate extensions in a local plane. The whole becomes greater than the sum of its parts. "The potential capability of VR (also VE's) to extend or enhance the range of our experience has metaphysical implications"

Proprioception – our bodily self-awareness may mean we can never be fully immersed but what if there is another way to suspend disbelief, and initiate suspension of self identity in a mediated environment, such as when a stage play can be fully engaged with to transfer your identity and 'become' that character, fully believing you are her/him. Some people have difficulty believing that programmes such as 'Coronation Street' a serial running on ITV television for over 30 years, still has fans who believe the drama is real,

sending letters to the characters the actors portray on the screen, believing and sympathising with any dilemma they find themselves caught up in.

Would it be possible to formulate some kind of experiment which would give us some clue as to whether this mechanism of 'willing suspension of disbelief'(Coleridge, 1817) has any relation to a 'willing suspension of self identity', making it possible to experiment in manipulating users to become a completely disembodied intellectual fabrication, leading to identity becoming fluid and ephemeral, even to change personality and character. (Davies, 2003)

Testing self-identity

Technology and cyberspace are in the first tentative stages of allowing the notion of the individual as an unstable, inter-changeable entity, partaking in a continuous process of multiple identity formation. The 'self' could become reconstituted as a fluid entity. Cyberspace would become a disembodying experience, which has transcendental and liberating effects on the psyche. Is cyberspace a place where 'self identity' is constructed and the rules of social interaction are built by consensus, not received from authority? (Fencott & Clay 2004) Comparison of other artists' navigation of 'virtual' space to investigate whether these pieces enable the viewer to imagine they possessed extra powers, or become present in strange places needs to be addressed.

"Bringing the object into our field of expertise and 'knowing' the object creates a power within us to give our opinion, we 'own' or 'possess' the object temporarily. In identifying with the object, we may begin transference of our notion of 'self' to the object."

To investigate and explore the notion of 'self identity' it became clear there had to be a mechanism to enable the exploration of the various signs and signifiers that portrayed 'self'

- How do you know who you are?
- What are the 'signs' which make you conscious of your self identity?

Damasio (1994) writes, "The problem of the rift between body and mind in Western medicine has not yet been articulated by the public at large, although it seems to have been detected." He goes on to say "In all fairness, we have to recognise that even mediocre Western medicine does solve a remarkable number of problems, quite decisively. But alternative forms of medicine do point to a blatant area of weakness in Western medical tradition that should be corrected scientifically, within scientific medicine itself." He then continues "If, as I believe, the current success of alternative medicine is a symptom of public dissatisfaction with traditional medicine's inability to consider humans as a whole, then this dissatisfaction is likely to grow in the years ahead."

If traditional medicine is neglecting human conditions and emotions as a whole person, then what is the game industry doing? Games such as 'Half Life', 'Medal of Honour' (EA Games) and other shoot 'em up beat 'em up's have yet to receive much positive press regarding these so styled violent games. These games have their place, where else can you go and shoot, maim and kill with impunity, and have nothing happen to you except you become the highest scorer in the game?

Tradition

Females traditionally engaged in the daily activity of gathering while their men hunted, ranging around to gather nuts, berries, and found objects that might enhance and beautify her family's cave etc. (Schlain, 2001) I cannot understand why we presume cave *men* painted the wall art found all over the world, when the women were home taking care of child rearing, when women are seen to be the main providers of home decoration, and to ignore that

tradition when the vast majority of women are the game buyers, either for their sons or husbands, or even for themselves, and then to ignore what games women would play, why they play them and what do they enjoy playing is a mystery to me.

The grim thrills of Silent Hill appeal to some women

Anna Larke has stated “Many people, not just women, may be put off by the common "geek" stereotype gamers have.

But it does not bother me, because playing a huge variety of games is something I enjoy doing and no "geeky gamer" image is going to put me off.

That is not the only stereotype that persists in this business. Some people believe that women only like role playing games, puzzles or adventure games. Others suggest that women do not like playing computer games at all and that games are just for boys.

In reality, it is down to personal preference, just like a person's taste in films, the books they like to read or TV programmes they enjoy. Why should there only be games for women or even games for men and boys, surely there is room for all types and styles of games.

Cartesian space

Cartesian space which has been inherited from the Western scientific and military paradigm and the traditional patriarchal model has been the convention for computer gaming for many years now. The conventional 3D computer graphic aesthetic relies on polygonal textured-mapped models, hard edged solid objects in empty space -a combination of low-level mimetic realism with emphasis on surface appearance, Cartesian space and Renaissance perspective, all of which reinforce a dualist way of seeing the world in terms of mastery and control (Wright, 1989) Commercial computer games approach interactivity as a means of empowering the human subject through violence and aggression (Cornwall, 1993) These conventional approaches to digital media reflect our culture's Cartesian world-view, with its tendency to reduce the world and its myriad of inhabitants to 'standing-reserve' for human consumption (Heidegger, 1997) “Interactivity produces action – action produces choice – choice produces action and so on.” (Crawford, 2005)

In some cases, our 'purposes' may be subtly (and perhaps invisibly), redefined by our use of a particular medium. This is the opposite of the pragmatic and rationalistic stance, according to which the means are chosen to suit the user's ends, and are entirely under the user's control.

One of the favourite playgrounds for mind and body has always been art. The experience of visual, literary and musical forms allow a projection of consciousness into something else, an out-of-body experience that becomes especially heightened with figurative and narrative forms. The persistence of vision of a movie star becomes me. A similar process occurs with written fiction. In each case a combination of imagination and image producing technology works to project a self outside our bodies. Imagine effortlessly re-shaping yourself and your ‘appearance’ through manipulation of words and images, representations rather than through modification of the

physical body. This will allow escape of boundaries and categories.

Margaret Wertheim (2000) likens the 'self' to "A fluid, leaking out around us all the time and joining each of us into a vast ocean, or web, of relationships with other leaky selves.

Aesthetics and Beauty

Aesthetics has been defined as the belief that the pursuit of beauty is the most important goal, and that it is the artist's duty to orchestrate selected elements from nature into a composition that, like music, exists for its own sake, without regard to moral or didactic issues. Prominent in the nineteenth century, now it often carries the connotation of decadence or preciousness. Also spelled estheticism, it is often associated with the fin de siècle circle of writer Oscar Wilde (Wilde, 1854-1900) painter James Abbott McNeill Whistler (1834-1903) and illustrator Aubrey Beardsley (1872-1898)

Lauria asks "What forms of beauty might we experience in VR? Is the grasping of beauty metaphysics itself? Is there a seduction factor to be considered here that could lead to an abuse of a deeper reality?" (In the 3rd century BC a passage from the Chinese book Tao Te Ching stated that although a wheel is made of 30 spokes, it is the space between the wheels that determines the overall form of the wheel. (Kakuso, 1906) The viewer is actively complicit because genuine beauty "could be discovered only by one who mentally completed the incomplete"

The early philosophers of the aesthetic recognised that a great many natural phenomena-flowers, minerals, waterfalls, landscapes, forests and the song of a nightingale among them – also gave rise to an aesthetic response a disinterested response, unrelated to use, price, necessity, or whatever. (Fuller, 1998)

Myth

As soon as you enter the world of fairy tales or myths you become aware of recurring types of characters. The Swiss psychologist Carl Jung called these characters "archetypes." He felt that the human race had a shared heritage and a collective unconsciousness of understood characters that acted in a certain way. Myths held important keys to the understanding of why we live and act the way we do.

Myths and magic were the forerunners of a rational, linear, text based society in the 'Behind the facts' exhibition, (Fundacio Joan Miro, 2004) in a collection of 100 works done between 1966 and 1975, focusing on the transformation of art in the late sixties, the most popular piece showing was a video of magic tricks, simple pieces such as when a liquid was dropped onto matches, they separated into a star shape. The people watching were fascinated by these simple magic tricks. Perhaps this could be called 'hyper real' when the chain of displacements connecting a series of imitations to an original become so attenuated that the original is lost as a referent. (Moser, 1996)

Barthes (1987) states, "myth does not deny things…it makes them innocent, it gives them a natural and eternal justification…It gives them the simplicity of essences, it does away with all dialectics, with any going back beyond what is immediately visible, it organizes a world which is without contradictions…Things appear to mean something by themselves."

In deceiving ourselves, we are the primary objects of the deception, above all, we are the source, the deceivers, this willful self-deception ignores the truth, disregards evidence and manipulates our emotions and attitudes. E.g. we believe we can kill, maim and change identity when we play a game. "Deep down we

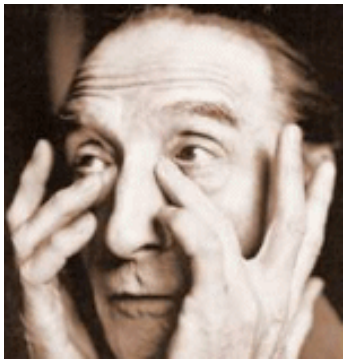
know we are playing a character, but when playing the game we refuse to accept this 'truth'" (Martin)

Mind Mapping

"When we look inside the brain we see that our actions follow our perceptions and our perceptions are constructed by brain activity. In turn, that activity is dictated by a neuronal structure that is formed by the interplay of our genes and environment. There is no sign of some Cartesian antennae tuned into another world. Reflecting – this self awareness makes the difference between merely being – a passive automaton – and doing – a creature of volition. Just as the various parts of an image - location, colour, size etc – are brought together and intergrated into a whole, so we bring together various memories and imaginings and put them together into a new concept" (Carter, 2003)

Artists and Game Playing

Artists have arguably been playing games and have traditionally 'played' with the notion of identity since DuChamp showed his 'Fountain' in Paris



Marcel Duchamp (1887 – 1968)

"Fountain"

One of Duchamps' several "ready-mades", the Fountain was likely the most outrageous. Designed to test the policy limits of an art exhibition, it lives on as an enduring test of the limits of art, which was a lifelong project for the master chess player, Duchamp. He is quoted as saying "As soon as we start putting our thoughts into words and sentences everything gets distorted, language is just no damn good-I use it because I have to, but I don't put any trust in it. We never understand each other."

Dada Art Movement

The Dada art movement that Duchamp belonged to was not an art style, but an anti militaristic and anti aesthetic attitude. The movement (in both art and literature) came out of the period just after World War I, starting in Zurich. It was a reaction to the destruction of which man was now capable through technology as well as a rejection of accepted canons of morality and taste. The spirit of Dada can be seen in the works of Duchamp, Man Ray, Jean Miro, and Picasso. The works of these artists were not met with enthusiasm at the time, but now are considered some of

the most important works of twentieth century art.

One of the leaders, the poet Tristan Tzara cut the daily newspaper into scraps of partial sentences. He dropped the pieces into a bag, shook it, dumped the contents onto a tabletop, and declared that the arrangements into which the scraps fell were "Dada poems" (If that's not game playing, I don't know what is!) The art movement that grew from Dadaism, surrealism, explored such juxtapositions as fur lined teacups and locomotives that floated in mid air. Angelina Jolie said while playing Lara Croft her ponytail became a separate entity, causing her to think again about her body movement, the way she filled her 'space', in comparison to the way the artists played with movement of paper through space.

This inter-action with the environment became the fore runner of inter-active pieces, engaging the person viewing the object and creating a mechanism by which the 'viewer' would be able to place a piece of them 'selves' with the piece.

Jaron Lannier coined the actual term 'Virtual Reality' in the late 1980's. He saw VR as having great creative possibilities and not being restricted to simulating aspects of real world experience or indeed other imaginable realities. In this way he supported the belief that VR could enable humans to experience environments they could never get to, take on powers they would not normally be able to and to temporarily transform themselves into another species, whether real or imaginary and so on. As important, aspects of VR could be distorted to create emphasis for virtual learning environments, compelling game-play for videogames and innovative aesthetic playgrounds for artists.

Will there come a time when the game genres such as 'beat em ups' and 'shoot em ups' enjoy a similar kind of comparison in the future? Or are they in the same condition of the Dadaists that of anti aestheticism?

Cognition

Works of art are cognitive devices aimed at the production of rich cognitive effects. Thus it can be argued, in the light of what is known about human cognition, that aesthetic experience is a by-product of the exercise of more fundamental cognitive faculties such as perception and imagination. Works of art, on this view, are never grasped directly. Rather, in an aesthetic experience, a subject directly perceives a certain object or event (a canvas, a display of pixels, a series of sounds), and this perception gives rise to a cognitive activity of a special, aesthetic type. As Foucault said "It is in vain that we say what we see; what we see never resides in what we say." Indeed, the poet Ezra Pound urged artists to "Make the world strange"

In the field of art practice it is 'best practice' to create and work on a piece until there is a point at where the piece is 'finished', this pushing forward of boundaries creates an aesthetic judgement of when to stop working on the piece. This investigation of materials, artefacts and juxtapositioning of objects is the beginning of a process involving research and experimentation to achieve what cannot be explained in text. Making the piece causes the artist to ask more questions, involving a cycle of creativity and further research.

Creativity and Perception

Real-time computer art objects are a unique art form. The artist can create new objects and new worlds in real-time art systems or she/he can simulate objects from the familiar world of physical interactions. One can easily

introduce areas of perception, which contradict or extend the way objects and their properties behave in the real world.

Real-time computer art objects are designed so that the user through participation realizes the aesthetic experience. The passive "viewer must become an active "participant" in the actual context provided by the system. A case can be made for the idea that art can alter perception, and that since perception is an active organizing process rather than a passive retention-of- image causation, only by actively participating with the art object can one perceive it - and thus, in perceiving it, change one's reality structure. The constraints the artist establishes with the software determine the kinds of options she/he can offer the participant and the options determine the way the participant is to interact with the art object. Would this affect a change in 'self identity'?

Game meaning

"…Videogames at their best build awe-inspiring spaces from immaterial light. They are cathedrals of fire. Now, it is true that the great cathedrals of Europe, at Rome, Chartres, or Köln, purposively evoke wonder not as a purely aesthetic end in itself, but as a means to lead the spectator to humble contemplation of his or her impotence in the face of the grandeur of God. Videogames, on the other hand, represent the latest stage in the secularization of wonder that has been abroad since the fine arts were divorced from religion and aesthetics was invented. Some people deplore this development; others argue intriguingly that that wonder has always been equally a secular instinct, providing the motivation for empirical scientific investigation" (Poole, 2000).

Artists fabricate fake copies of reality, imagination seen as a pernicious strategy of simulation: one which tempts mortals to take themselves for omniscient gods, whereas in fact they are merely playing with reflections in a mirror. Aristotle was prepared to admit there could be no thinking 'without images'

We are constantly faking our notion of self identity by creating a persona to present to the world, concealing or revealing only what we want others to perceive. Thomas Aquinas observed imagination makes everything other than it is' Baudelaire nominated the imagination "the queen of the faculties…which decomposes all creation and created a new world, the sensation of novelty".

Imagination and Perception

Exploring imagination as an intentional act of consciousness which both intuits and constitutes essential meaning – arguing that to be free means to be able to surpass the empirical world as it is given here and now in order to project new possibilities of existence.

Bachelard (1958) in his Poetics of Space muses, "a phenomenology of imagination must do away with all intermediaries … it is not a question of observing but of experiencing being in its immediacy."

Games are becoming broader; the old genres are blurring and becoming one. "Now we combine driving with dynamics, and hiring cinematographers to work with film and actors. Engineering is in all products; every game consists of a piece of original engineering, every game involves a victory condition", Ernest Adams proposes that viewing an art piece also involves this, "You have to work hard to understand a piece of art, just as much as a difficult game."

In phenomenology, Husserl (2004) explains, "images assume a privileged position over perception" because they afford a "freedom which opens for the

first time an entry into the spacious realms of essential possibility with their infinite horizons of essential knowledge" by suspending a things actual or empirical existence and allowing it to float freely as an 'imaginative irreality' amidst an infinitely open series of possibilities, ideation discloses the essences of the things themselves

Why make a game feel real - why not create a more visual and rich format – it is a different medium to real life. Painting once represented the world of representation, which photography freed it from. Video subsequently freed photography, net art freed artists and gave them the chance to circumvent the gallery and museum system. What will games do?

Mechanisms

"It is time to feed the imagination - there is room for different types of format, creating magic in a way other genres are unable to do so" (Pratchett, 2005) When viewing a film or a piece of artwork that engages the viewer emotionally, something happens to the mind of the viewer that puts the viewer into that piece of work, engaging the whole person, consciously and unconsciously, causing the viewer to forget where they are and places the viewer actually into the scene, taking on all of the makers thoughts and ideas and emotions. What is the mechanism that begins this transference?

In his lectures on Art Ramachandran (2003) suggested 10 universal laws of art, including grouping, isolation, perception or problem solving, repetition and metaphor. When examining a game, which of these elements are found in game play? It could be argued that all of them are. So does playing games make you an artist?

Ramachandran states "human artists through trial and error, and through intuition, have discovered the figural primitives of our perceptual grammar. They are tapping into these" thus are creating puzzles to be solved.

He goes on to say "Vision evolved mainly to discover objects and to defeat camouflage. You don't realize this when you look around you and you see clearly defined objects. But imagine your primate ancestors scurrying up in the treetops trying to detect a lion seen behind fluttering green foliage. What's the likelihood that all these different yellow fragments are exactly the same yellow simply by chance? There's something object-like, pay attention here. It's a lion - let me out of here!" What about puzzles? Perceptual problem evolved because we originally living in highly camouflaged environments the wiring of our visual centres to our emotional centres ensures that the very act of searching for the solution is pleasing.

Ernest Adams, (2001) when talking about the effect of a victory condition in game play says "One of the key characteristics of many games is that they have victory conditions. As soon as you establish a victory condition, give the player a goal, the player starts to work towards something. They concentrate their attention on achieving the goal. I'm not convinced you can have an art appreciation experience if you are working towards a goal at the

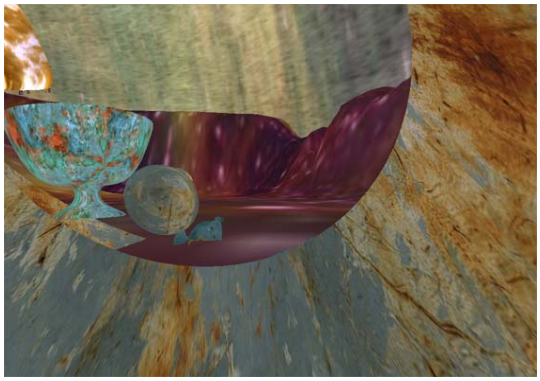
same time." Why not if the 'victory' is to relax and enjoy and meditate, by default you will have 'time to see the sky and look at the trees, listen to the wind' thus enabling a new way to interact and 'become' another entity.

Game on

The practice of playing a computer game could be regarded as an aesthetic and sometimes creative process, changing time, dimension space and self. In creating a computer game, using artistic practices garnered from a lateral thinking background of training enabled me to think about games in a different way to the Cartesian dualistic view. In 'Star World' you can literally 'walk' on the stars. Taking your place in the environment I have created gives you the space, time and opportunity in an alternative virtual environment where you may go to and meditate and have some time to relax.

It is built – not to shot and kill, available in fantasy games - but to breathe and relax in an easy to navigate, virtual piece. In seducing the 'player' to interact with 'Star World' world, I am interpreting reality by appropriating gaming metaphors, design principles, and architectural technologies for alternative kinds of art-related content, creating abstract situations within a cyber landscape enabling engagement with the user.

Cyberspace for me is a window through which I can see a meditation world rendered more sharply defined, isolated and specific. Where things may have a different hierarchy of importance than they do in the experiences of everyday life, or the casual glance. I found in my discovery of digital imagery, a form that had immediacy and a directness that enabled me to develop a tangible and creative contact with the world. Cyberspace, therefore, broadens my vision both metaphorically and literally, the magic of discovery was no longer dominated by my imagination alone or the limitations of a style haunted by past art. I am now much more of an explorer than I was before, in the literal sense. The monitors' screen becoming a platform through which I explore a world filled with endless possibilities.



Many of the most influential arts movements in the past century – for example Dada, Surrealism, and so many others - arguably, were all playing games of one genre or another.

As an artist, I wish to create a new playscape space to play a 'meditation' game.

"Veduta Ideata"

In my "veduta ideata", 'Star World' is a realistically conceived scene that contains wholly imaginary elements. Star maps are textured onto a displacement mapped twig landscape, producing stars wrapped around the formation of tree growth. Hand made paper scanned in and reproduced digitally becomes a rotating inner sphere, a real world item transformed into a mythical landscape. Slow moving animations create a hypnotic feast for the eyes; the stuff in the digital landscape may not exist, but the spirit of the artefacts exists in the space.

There are few rules to learn in negotiating this space, and very simple controls, move slowly, take your time, enjoy, and relax being the few. There is no avatar represented for you to

'become'; you can image yourself in any guise. The players' role is to become relaxed, safe, de-stressed, quiet, and peaceful. The game structure is a simple landscape with few core mechanics, animations, sound and textures. All players can win if they wish. The physical challenge is timing and rhythm, the exploration challenge becomes negotiating illogical spaces.

There is an economic challenge to achieve balance and care for your-self. Conceptual challenge is the understanding of something new, deduction, observation, and interpretation of this space. The game worlds' mental space is a space that is not-the-real-world, and it is entered by choosing to play. The fantasy environment of the game world setting helps the entertainment, contributes to immersion and fantasy and means it needs to be looked at more with time spent in the world.

The scale of the physical dimension in the world is literally the size of the Earth, using the measurements of the Earths' circumference; the world is built using real world measurements. When moving through the world, the size of 'you' is tiny in comparison to the scale of the world; you become a miniscule pixel in a massive world. Navigation through artefacts means the possibility of interfacing with an unreality, not allowed in the real world, seeing an object from a different perspective.

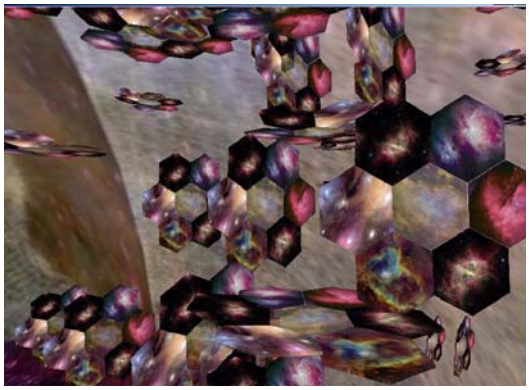
Creating this space causes semiotics structures and a 'code of interaction' to activate a private mind-space, activating meaning in structures in this space. Semiotics is based on a very simple, yet fundamental, yet general notion of a sign that applies to anything that can have meaning for us, either the signifier - the physical thing in the world that you can perceive, or the signified - the meaning, in your mind, that you associate with the physical signifier, making a link between the real world and the world of our individual minds and imaginations. The signifier can be anything we can come to be aware of in the world around us: it can be words, images, textures and structures.

Conclusion

In a perceptual snapshot of the signs on offer and their overall meanings suggests to the player, or in other words - connotes, a different relationship that s/he desires and tries to achieve; in turn this results in the construction of a different relationship out of the many that were possible; one that may or may not resemble the one desired, or thought of by the creator.

The boundary at the end of the world is the rotating sphere, creating a temporal dimension in which time becomes meaningless, the player 'going with the flow'. The physical surroundings consist of a terrain, a sphere, animations and sculptures. The player can perceive either a small part of the world, or, if s/he chooses, has the option of navigation to a vantage point at the top of the world to discern their spatial positioning.

This world is created using abstractions, taking place in an unfamiliar world, however, representational knowledge of the real world is used to create navigation, for example to negotiate the controls to turn left, hit the left cursor key. Navigation is also possible by sound direction, clues to other areas being heard and giving intimations of direction. There are a series of puzzles that advance a plot, e.g. find the sound and relax, find the sky and watch it, the player remaining in full control at all times of where s/he wants to go.



Considering all the rhetoric that has been produced about information technologies and their impact on global culture, it's easy to feel exhausted, or at the very least tired, by the prospect of more discourse, some people are stressed, tired and depressed, and some are looking for something to relax with that is not a chemical substance. The ease and pace of navigation through this world is aimed at older people, not hard core game players, and therapists working in alternative practices, giving their patients a space to relax in.

Holding one's breath and being centred in balance opens up a profound way of relating to the world. According to some figures, it is believed that stress related disorders affect 80% of the population. Relaxation and meditation techniques offer deep breathing, nose-breathing focus, positive affirmations and other techniques to bring the body and mind into a state of calm. More energy, calmer disposition, more control, clearer thinking, improved memory, increased productivity, and enhanced creativity being some of the benefits gained from regular meditation.

Cyberspace has the ability to evoke a depth of vision that some may describe as spiritual and a sensibility that somehow transcends the cold harshness of the real world, inducing visual and auditory imagination, provoking dramatic imagination, awakening conceptual imagination, and instigating lateral thinking. Players can gain greater insight into their perceptions, reactions and behaviours in life, and do not have to feel guilty about including a period of relaxation every day.

"We are stardust filled with breath, sometimes you have to lie in the grass to see the stars"

"We are all in the gutter, but some of us are looking at the stars." (Oscar Wilde)

Breathe in life.
Without this breath the dust can never be more than dirt

Breathe in

Breathe out

Breathe in, and hold your breath. Hold it for too long, and you will return to dust. But hold it for a while, and think. And then breathe again

In

Out

Give

Receive

Move

Rest

There is a huge variety of excellent games out there begging to be played, with room for new genres to emerge. Our lives can become the real medium for play; engagement of our emotions with this 'game' will not be about shooting virtual robots or chasing imaginary VR bio-zombies. Games could actually change our lives and our world for the better, physically or spiritually.

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Appendix viii

F: Computer Graphics, Imaging & Visualisation Conference

Beijing, China 2005

“Game with a Purpose”

Game with a Purpose

Maggie Parker, Clive Fencott,
Paul van-Schaik

University of Teesside SpIDERS Studio

{m.parker@tees.ac.uk
p.c.fencott@tees.ac.u
p.van-schaik@tees.ac.uk}

Abstract

The practice of playing a computer game could be regarded as an aesthetic and sometimes creative process, changing time, dimension space and self. To create 'Star World' a meditative computer game, artistic practices garnered from Art training methodology enabled the production of a computer game in an alternative way to the Cartesian dualistic view. In 'Star World' you can literally 'walk' on the stars. Interacting with the environment created gives space, time and opportunity to meditate and have some time to relax.

It is built – not to shot and kill, available in fantasy games - but to breathe and relax in an easy to navigate, virtual piece. In seducing the 'player' to interact with 'Star World' world, I am interpreting reality by appropriating gaming metaphors, design principles, and architectural technologies for alternative kinds of art-related content.

Keywords: virtual environment, games, art, meditation, relaxation.

1. Introduction

Game modding creates new levels and introduces new ways of 'seeing' and imagining the virtual space used by game players, graphic cards produce better and better representations of reality. What is modding? Modding can be anything that you do to change something about an existing game. For example, some games allow you to design and play your own levels and make your own player models, while others allow you to invent completely new types of games by modifying the original program code and writing your own code. AI engines become more and more sophisticated with better game physics creating real world reactions, but are all these improvements increasing the level of engagement that game players traditionally have with their games? There is beginning to be a rigorous investigation analysing the structure and content of computer games, their impact on the psychology of the genre, their uses for education and the technical aspects of the formation and building of games.

What will happen to the future development and production of digital art based on these new improvements to representative 'seeing'? Old black and white films conversion to colour and sound produced a more discerning and sophisticated audience, leading to experimentation with sounds and imagery on video production becoming mainstream and available to the general public.

Is there another way to achieve creative spaces than the mechanism that is traditionally engaged in traditional art works? Using alternative emotional pathways to investigate whether a deeper state of immersion and loss of 'self identity' could be achieved using artistic practice and methodology to create an alternative environment, is a technique to test and assess these notions.

It could be argued that artists have traditionally played games since even before the Dada Art Movement, and this paper is investigating the possibility of creating a mechanism whereby immersion and changes in 'self identity' using artistic practices and software technologies could be used to examine the possibilities of alternative game production.

Incorporating experimentation and data evaluation to assess issues involved in facilitating a change in self-identity, would give this exploration an added depth for further investigation to proceed by investigating the use of artistic practice to compare an art based approach with a semiotic model investigation into the exploration of the "willing suspension of self identity" as opposed to the 'willing suspension of disbelief' [1]

2. Background History

Janet Murray, (1997) [2] observes that media go through identifiable phases of evolution before their nature and therefore their effective application can be understood. Using the evolution of the printed book as an example she lists the following phases of evolution:

- Embryonic
- Incunabula Technology exists but is only partially understood
- Fully fledged

Incunabula is the stage I believe the game world creative and artistic makers are at the moment.

The technology and 3d design packages used by the games industry are so expensive, they have not been widely and readily available to other creatives [3] however, the introduction of more reasonable priced software packages is addressing this problem. Artists are able to subvert software by 'modding' games levels, with the artist changing a functional or aesthetic element in an existing game

3. Artistic Manipulation

In the mid-90s Doom offered many their first glimpse at what players could do to extend the life of a game. First person shooters continued to be a major focus for modders as the Quake and Half-Life franchises gained immense popularity. The Counter Strike modification for Half-Life brought the most hesitant developer to the realization that modding was a reality, even an opportunity, that couldn't be ignored.

Fans of Role Playing Games have been graced with moddables to work with as well. Two big names in the last few years are Neverwinter Nights and Morrowind. Sites like Morrowind Summit and Neverwinter Vault house tons of material for those who finished the games and want more.

People are creating their own versions of games that have other messages to disseminate throughout the inter-net. Creating meandering wanderings around a virtual universe to create a story unique to themselves, subliminally affecting 'mind'[4] and 'self' "Finding other paths from darkened bedrooms into a bright new world in voracious pursuit of new games and roles to play" [5]

What can we do when playing games? Just a few things we can do -

- Command armies
- Rule Worlds
- Change identities
- Navigate through unfamiliar territory
- Shoot, maim and kill 'people'
- Build cities
- Solve puzzles

But games can be used to do and create other meanings**:-**

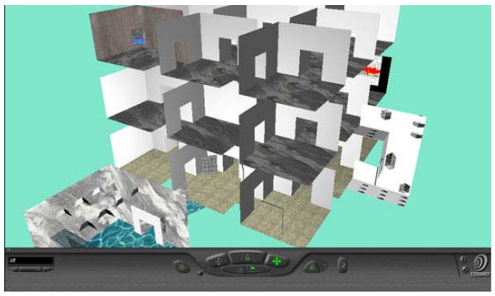


Figure 1 'Art Gallery'
Maggie Parker 2000 ©

It could be argued that the art gallery I created in cyberspace was a game, you

have to walk around it and discover what is on the walls, or in space as real time rules do not apply here.

For example the entrance floor is textured with water because in cyberspace you can walk on water.

Another example of game modding by artists:-

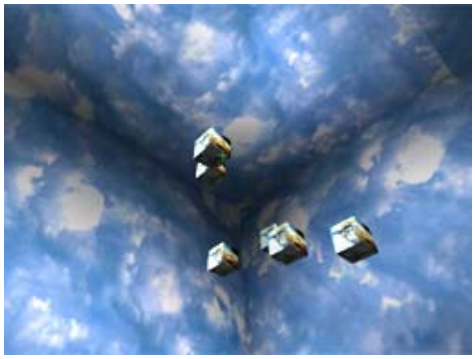


Figure 2 'Dream Day'
Mark Dietrich & Michael Huber

This image is from a workshop run by Maia Engeli [6] and was produced by modding the Unreal Tournament game engine to produce creative work.

Software is also used in a different way by manipulating coding to produce interaction as seen below from an example of coding being used to produce something different.

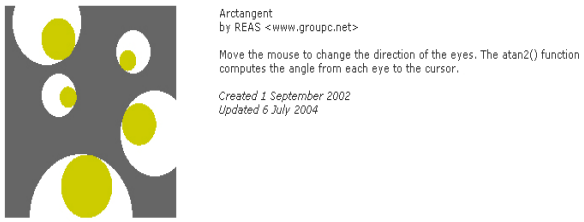


Figure 3 'Arctangent' Casey Reas

This image is made using freeware readily available used to create and alter parameters to interact with mouse-overs. [7]

To paraphrase Lauria, [8] these artists' games have the potential to transcend properties like continuity, and causality through the creation of…virtual space where all elements function to create meaning beyond their separate extensions in a local plane. The whole becomes greater than the sum of its parts.

3.1 Fooling the Mind

Ramachandran [9] in his Reith lectures in 2003 says art has nothing to do with realism. It is not about creating a realistic replica of what's out there in the world. In other words human artists through trial and error, through intuition, through genius have discovered the figural primitives of our perceptual grammar.

It may be easy to fool the brain, artists have been doing this for millennia, the game world also works on this principle, due to the fact of polygon counting and storage of data, perhaps the game world is becoming more like the art world, where the shape of a shoulder may be suggested, letting the mind fill in the gaps. Jon Hare[10] suggests that the learning curve for games should be gentle, with constant mental or physical input giving the game player something to think about – constantly moving the goal posts further away with tantalising glimpses of rewards to come.

Proprioception – our bodily self-awareness may mean we can never be fully immersed, where by immersion we mean the technology of the embodying interface rather than the mental state of presence – the willing suspension of disbelief [11] and individual memory. It is possible to be fully present in a mediated world whilst only being partially immersed [12]. Is it possible to be fully 'present' when looking at a piece of art work?

But what if there is another way to suspend disbelief, and initiate suspension of self identity in a mediated environment, such as when a stage play can be fully engaged with to transfer your identity and 'become' that character, fully believing you are her/him. Some people have difficulty believing that programmes such as 'Coronation Street' a serial running on ITV television for over 30 years, still has

fans who believe the drama is real, sending letters to the characters the actors portray on the screen, believing and sympathising with any dilemma they find themselves caught up in.

Would it be possible to formulate some kind of experiment which would give us some clue as to whether this mechanism of 'willing suspension of disbelief 'has any relation to a 'willing suspension of self identity', making it possible to experiment in manipulating users to become a completely disembodied intellectual fabrication, leading to identity becoming fluid and ephemeral, even to change personality and character. [13]

Probing the "willing suspension of disbelief" would lead to experimenting within the aware and the unaware, presence and immersion happenings taking place between cyberspace and the 'real time' person operating the equipment. In seducing the person to interact with the equipment, would the person relate and change their personality? For example, when working as an artist, one would attempt to interpret reality by appropriating gaming metaphors, design principles, or core technologies for alternative kinds of art-related content creating abstract situations within a cyber landscape enabling engagement with the user.

3.2 Testing self-identity

Technology and cyberspace are in the first tentative stages of allowing the notion of the individual as an unstable, inter-changeable entity, partaking in a continuous process of multiple identity formation. The 'self' could become reconstituted as a fluid entity. Cyberspace would become a disembodying experience, which has transcendental and liberating effects on the psyche. Is cyberspace a place where 'self identity' is constructed and the rules of social interaction are built by consensus, not received from authority?[14] Comparison of other artists' navigation of 'virtual' space to investigate whether these pieces enable the viewer to imagine they possessed extra powers, or become present in strange places. [15]

Bringing the object into our field of expertise and 'knowing' the object creates a power within us to give our opinion, we 'own' or 'possess' the object temporarily. In identifying with the object, we may begin transference of our notion of 'self' to the object. [16]

3.3. The 'Notion of Self Identify'

To investigate and explore the notion of 'self identity' it became clear there had to be a mechanism to enable the exploration of the various signs and signifiers that portrayed 'self'

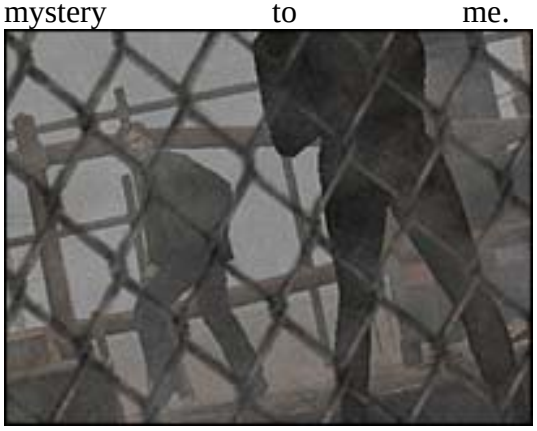
- How do you know who you are?
- What are the 'signs' which make you conscious of your self-identity?

Damasio [17] writes, "The problem of the rift between body and mind in Western medicine has not yet been articulated by the public at large, although it seems to have been detected." He goes on to say "In all fairness, we have to recognise that even mediocre Western medicine does solve a remarkable number of problems, quite decisively. But alternative forms of medicine do point to a blatant area of weakness in Western medical tradition that should be corrected scientifically, within scientific medicine itself." He then goes on to say "If, as I believe, the current success of alternative medicine is a symptom of public dissatisfaction with traditional medicine's inability to consider humans as a whole, then this dissatisfaction is likely to grow in the years ahead."

If traditional medicine is neglecting human conditions and emotions as a whole person, then what is the game industry doing? Games such as 'Half Life', 'Medal of Honour' and other shoot 'em up beat 'em up's have yet to receive much positive press regarding these so styled violent games. These games have their place, where else can you go and shoot, maim

and kill with impunity, and have nothing happen to you except you become the highest scorer in the game?

Females traditionally engaged in the daily activity of gathering while their men hunted, ranging around to gather nuts, berries, and found objects that might enhance and beautify her family's cave etc. [18] Why do we make the assumption that cave *men* painted the wall art found all over the world, when the women were home taking care of child rearing, when women are seen to be the main providers of home decoration, and to ignore that tradition when the vast majority of women are the game buyers, either for their sons or husbands, or even for themselves, and then to ignore what games women would play, why they play them and what do they enjoy playing is a mystery to me.



The grim thrills of Silent Hill appeal to some women

Figure 4 'Silent Hill'
Screenshot from game

Anna Larke has stated "Many people, not just women, may be put off by the common "geek" stereotype gamers have. But it does not bother me, because playing a huge variety of games is something I enjoy doing and no "geeky gamer" image is going to put me off.'' That is not the only stereotype that persists in this business. Some people believe that women only like role playing games, puzzles or adventure games. Others suggest that women do not like playing computer games at all and that games are just for boys. In reality, it is down to personal preference, just like a person's taste in films, the books they like to read or TV programmes they enjoy." [19] Why should there only be games for women or even games for men and boys, surely there is room for all types and styles of games. In comparison to the art world, there are the Fine arts, including painting and printmaking, but there is also room for other kinds of art production including digital.

4. Space

Cartesian space which has been inherited from the Western scientific and military paradigm and the traditional patriarchal model has been the convention for computer gaming for many years now. The conventional 3D computer graphic aesthetic relies on polygonal textured-mapped models, hard edged solid objects in empty space -a combination of low-level mimetic realism with emphasis on surface appearance, Cartesian space and Renaissance perspective, all of which reinforce a dualist way of seeing the world in terms of mastery and control. [20]

Commercial computer games approach interactivity as a means of empowering the human subject through violence and aggression. [21] These conventional approaches to digital media reflect our culture's Cartesian world-view, with its tendency to reduce the world and its myriad of inhabitants to 'standing-reserve' for human consumption. [22] Interactivity produces action – action produces choice – choice produces action and so on. [23] In some cases, our 'purposes' may be subtly (and perhaps invisibly), redefined by our use of a particular medium. This is the opposite of the pragmatic and rationalistic stance, according to which the means are chosen to suit the user's ends, and are entirely under the user's control.

One of the favourite playgrounds for mind and body has always been art. The experience of visual, literary and musical forms allow a projection of consciousness into something else, an out-of-body experience that becomes especially heightened with figurative and narrative forms. The persistence of vision of a movie star becomes me. A similar process occurs with written fiction. In each case a combination of imagination and image producing technology works to project a self outside our bodies. Imagine effortlessly re-shaping yourself and your 'appearance' through manipulation of words and images, representations rather than through modification of the physical body. This will allow escape of boundaries and categories.

Margaret Wertheim [24] likens the 'self' to "A fluid, leaking out around us all the time and joining each of us into a vast ocean, or web, of relationships with other leaky selves.

4.1 Aesthetics

Aesthetics has been defined as the belief that the pursuit of beauty is the most important goal, and that it is the artist's duty to orchestrate selected elements from nature into a composition that, like music, exists for its own sake, without regard to moral or didactic issues. Prominent in the nineteenth century, now it often carries the connotation of decadence or preciousness. Also spelled estheticism, it is often associated with the fin de siècle circle of writer Oscar Wilde (English, born Ireland, 1854-1900), painter James Abbott McNeill Whistler (American, 1834-1903), and illustrator Aubrey Beardsley (English, 1872-1898).

Lauria [[25] asks "What forms of beauty might we experience in VR? Is the grasping of beauty metaphysics itself? Is there a seduction factor to be considered here that could lead to an abuse of a deeper reality?

In the 3rd century BC a passage from the Chinese book Tao Te Ching stated that although "a wheel is made of 30 spokes, it is the space between the spokes that determines the overall form of the wheel. [26] The viewer is actively complicit because genuine beauty "could be discovered only by one who mentally completed the incomplete"

Ramachandran was examining why humans 'look' like this and discovered grouping or patterning, stating that

Figure 5 'Now you see it'

"Vision evolved mainly to discover objects and to defeat camouflage. You don't realize this when you look around you and you see clearly defined objects." It also invokes another way of 'looking' perceptual problem solving – going on to say "Every partial glimpse has to be pleasing enough to prompt further visual search - In other words, the wiring of your visual centres to your emotional centres ensures that the very act of searching for the solution is pleasing."

The early philosophers of the aesthetic recognised that a great many natural phenomena-flowers, minerals, waterfalls, landscapes, forests and the song of a nightingale among them – also gave rise to an aesthetic response a disinterested

response, unrelated to use, price, necessity, or whatever.[27]

Many artists, some computer scientists, also experimented with image manipulation and early versions of computer-animated films. This activity in computer graphics certainly brought up issues concerned with the originality and reproducibility of the artwork, but also began to hint at the possibility that artistic creation might not be restricted to the human imagination.

5. Myth and Magic

As soon as you enter the world of fairy tales or myths, (myth is a story about superhuman beings of an earlier age e.g. stories of the goddesses and gods of ancient Greece but myth can also mean a fictitious, unproven or illusionary thing) you become aware of recurring types of characters. The Swiss psychologist Carl Jung called these characters "archetypes." He felt that the human race had a shared heritage and a collective unconsciousness of understood characters that acted in a certain way. Myths held important keys to the understanding of why we live and act the way we do.

Myths and magic were the forerunners of a rational, linear, text based society, at the Fundació Joan Miro museum in the 'Behind the facts' exhibition Barcelona, [28] in a collection of 100 works done between 1966 and 1975, focusing on the transformation of art in the late sixties, the most popular piece showing was a video of magic tricks, simple pieces for example when a liquid was dropped onto matches, they separated into a star shape. The people watching were fascinated by these simple magic tricks. Perhaps this could be called 'hyper real' as Baudrillard explained, when the chain of displacements connecting a series of imitations to an original become so attenuated that the original is lost as a referent.[29]

Barthes stated, "myth does not deny things…it makes them innocent, it gives them a natural and eternal justification…It gives them the simplicity of essences, it does away with all dialectics, with any going back beyond what is immediately visible, it organizes a world which is without contradictions…Things appear to mean something by themselves." [30]

In deceiving ourselves, we are the primary objects of the deception, above all, we are the source, the deceivers, this willful self-deception ignores the truth, disregards evidence and manipulates our emotions and attitudes. E.g. we believe we can kill, maim and change identity when we play a game. Deep down we know we are playing a character, but when playing the game we refuse to accept this 'truth'. [31]

"When we look inside the brain we see that our actions follow our perceptions and our perceptions are constructed by brain activity. In turn, that activity is dictated by a neuronal structure that is formed by the interplay of our genes and environment. There is no sign of some Cartesian antennae tuned into another world. Reflecting – this self awareness makes the difference between merely being – a passive automaton – and doing – a creature of volition. Just as the various parts of an image - location, colour, size etc – are brought together and integrated into a whole, so we bring together various memories and imaginings and put them together into a new concept" [32]

5.1 Artists and Game Playing

Artists have arguably been playing games and have traditionally 'played' with the notion of identity since Marcel Duchamp showed his 'Fountain' in Paris

Figure 6 'Fountain'
Marcel Duchamp Installation

One of Duchamps' several "ready-mades", the Fountain was likely the most outrageous. Designed to test the policy limits of an art exhibition, it lives on as an enduring test of the limits of art, which was a lifelong project for the master chess player, Duchamp. He is quoted as saying "As soon as we start putting our thoughts into words and sentences everything gets distorted, language is just no damn good-I use it because I have to, but I don't put any trust in it. We never understand each other."

5.2 Dada Art Movement

The Dada art movement which Duchamp belonged to was not an art style, but an anti militaristic and anti aesthetic attitude. The movement (in both art an**d** literature) came out of the period just after World War I, starting in Zurich. It was a reaction to the destruction of which man was now capable through technology as well as a rejection of accepted canons of morality and taste. The spirit of Dada can be seen in the works of Duchamp, Man Ray, Jean Miro, and Picasso. The works of these artists were not met with enthusiasm at the time, but now are considered some of the most important works of twentieth century art.

One of the leaders, the poet Tristan Tzara cut the daily newspaper into scraps of partial sentences. He dropped the pieces into a bag, shook it, dumped the contents onto a tabletop, and declared that the arrangements into which the scraps fell were "Dada poems" (If that's not game playing, I don't know what is!) The art movement that grew from Dadaism, surrealism, explored such juxtapositions as fur lined teacups and locomotives that floated in mid air. [33]

This inter-action with the environment became the fore runner of inter-active pieces, engaging the person viewing the object and creating a mechanism by which the 'viewer' would be able to place a piece of them 'selves' with the piece.

5.3 Virtual Environments

Jaron Lannier coined the actual term 'Virtual Reality' in the late 1980's. [34] He saw VR as having great creative possibilities and not being restricted to simulating aspects of real world experience or indeed other imaginable realities. In this way VR, and virtual environments could enable humans to experience environments they could never get to, take on powers they would not normally be able to and to temporarily transform themselves into another species, whether real or imaginary and so on. As important, aspects of VR could be distorted to create emphasis for virtual learning environments, compelling game-play for videogames and innovative aesthetic playgrounds for artists.

Will there come a time when the game genres such as 'beat em ups' and 'shoot em ups' enjoy a similar kind of comparison in the future? Or are they in the same condition of the Dadaists that of anti aestheticism?

5.4 Cognition

Works of art are cognitive devices aimed at the production of rich cognitive effects. Thus it can be argued, in the light of what is known about human cognition, that aesthetic experience is a by-product of the exercise of more fundamental cognitive faculties such as perception and imagination. Works of art, on this view, are never grasped directly. Rather, in an aesthetic experience, a subject directly perceives a certain object or event (a canvas, a display of pixels, a series of sounds), and this perception gives rise to a cognitive activity of a special, aesthetic type. As Foucault said “It is in vain that we say what we see; what we see never resides in what we say. [35] Indeed, the poet Ezra Pound urged artists to “Make the world strange”

In the field of art practice it is best practice to create and work on a piece until there is a point at where the piece is ‘finished’, this pushing forward of boundaries creates an aesthetic judgement of when to stop working on the piece. This investigation of materials, artefacts and juxtapositioning of objects is the beginning of a process involving research and experimentation to achieve what cannot be explained in text. Making the piece causes the artist to ask more questions, involving a cycle of creativity and further research.

Real-time computer art objects are a unique art form. The artist can create new objects and new worlds in real-time art systems or she/he can simulate objects from the familiar world of physical interactions. One can easily introduce areas of perception, which contradict or extend the way objects and their properties behave in the real world.

5.5 Changes in ‘self identity’?

Real-time computer art objects are designed so that the user through participation realizes the aesthetic experience. The passive "viewer” must become an active "participant" in the actual context provided by the system. A case can be made for the idea that art can alter perception, and that since perception is an active organizing process rather than a passive retention-of- image causation, only by actively participating with the art object can one perceive it - and thus, in perceiving it, change one's reality structure. The constraints the artist establishes with the software determine the kinds of options she/he can offer the participant and the options determine the way the participant is to interact with the art object.

“…Videogames at their best build awe-inspiring spaces from immaterial light. They are cathedrals of fire. Now, it is true that the great cathedrals of Europe, at Rome, Chartres, or Köln, purposively evoke wonder not as a purely aesthetic end in itself, but as a means to lead the spectator to humble contemplation of his or her impotence in the face of the grandeur of God. Videogames, on the other hand, represent the latest stage in the secularization of wonder that has been abroad since the fine arts were divorced from religion and aesthetics was invented. Some people deplore this development; others argue intriguingly that that wonder has always been equally a secular instinct, providing the motivation for empirical scientific investigation.” [36]

6. Semiotic Structures

Meaning is not 'transmitted' to us - we actively create it according to a complex interplay of codes or conventions of which we are normally unaware. Becoming aware of such codes is both inherently fascinating and intellectually empowering. We learn from semiotics that we live in a world of signs and we have no way of understanding anything except through signs and the codes into which they are

organized. Through the study of semiotics we become aware that these signs and codes are normally transparent and disguise our task in 'reading' them. Living in a world of increasingly visual signs, we need to learn that even the most 'realistic' signs are not what they appear to be. By making more explicit the codes by which signs are interpreted we may perform the valuable semiotic function of 'denaturalizing' signs. In defining realities signs serve ideological functions. Deconstructing and contesting the realities of signs can reveal whose realities are privileged and whose are suppressed.

"Artists fabricate fake copies of reality, imagination seen as a pernicious strategy of simulation: one which tempts mortals to take themselves for omniscient gods, whereas in fact they are merely playing with reflections in a mirror." Aristotle was also prepared to admit there could be no thinking 'without images'. We are constantly faking our notion of self identity by creating a persona to present to the world, concealing or revealing only what we want others to perceive. Thomas Aquinas observed imagination makes everything other than it is' Baudelaire nominated the imagination 'the queen of the faculties…which decomposes all creation and created a new world, the sensation of novelty'. Artists are exploring imagination as an intentional act of consciousness which both intuits and constitutes essential meaning – arguing that to be free means to be able to surpass the empirical world as it is given here and now in order to project new possibilities of existence. Bachelard muses "a phenomenology of imagination must do away with all intermediaries … it is not a question of observing but of experiencing being in its immediacy."[37]

7. Games & Imagination

Games are becoming broader; the old genres are blurring and becoming one. Games now combine driving with dynamics, and games companies are hiring cinematographers to work with film and actors. Engineering is in all products; every game consists of a piece of original engineering, every game involves a victory condition, looking at an art piece also involves this, you have to work hard to understand a piece of art, just as much as a difficult game". In phenomenology, Husserl explains, 'images assume a privileged position over perception' because they afford a 'freedom which opens for the first time an entry into the spacious realms of essential possibility with their infinite horizons of essential knowledge.'[38] By suspending a things actual or empirical existence and allowing it to float freely as an 'imaginative irreality' amidst an infinitely open series of possibilities, ideation discloses the essences of the things themselves. Angelina Jolie said while playing Lara Croft her ponytail became a separate entity, causing her to think again about her body movement, the way she filled her 'space' [39]

Why make a game feel real why not create a more visual and rich format – it is a different medium to real life. Painting once represented the world of representation, which photography freed it from. Video subsequently freed photography; net art freed artists and gave them the chance to circumvent the gallery and museum system. What will games do? "It is time to feed the imagination - there is room for different types of format, creating magic in a way other genres are unable to do so" [40]

7.1 Games and Goals

When viewing a film or a piece of artwork that engages the viewer emotionally, something happens to the mind of the viewer that puts the viewer

into that piece of work, engaging the whole person, consciously and unconsciously, causing the viewer to forget where they are and places the viewer actually into the scene, taking on all of the makers thoughts and ideas and emotions.

Ernest Adams when talking about the effect of a victory condition in game play says "One of the key characteristics of many games is that they have victory conditions. As soon as you establish a victory condition, give the player a goal, the player starts to work towards something. They concentrate their attention on achieving the goal. I'm not convinced you can have an art appreciation experience if you are working towards a goal at the same time." [41]

Why not if the 'victory' is to relax and enjoy and meditate, by default you will have 'time to see the sky and look at the trees, listen to the wind' [42]

8. Game Creation

The practice of playing a computer game could be regarded as an aesthetic and sometimes creative process, changing time, dimension space and self. In creating a computer game, using artistic practices garnered from an Art college background enabled me to think about games in another way to the Cartesian dualistic view. In 'Star World' you can literally 'walk' on the stars. Taking your place in the environment I have created gives you the space, time and opportunity in an alternative virtual environment where you may go to and meditate and have some time to relax.

It is built – not to shot and kill, available in fantasy games - but to breathe and relax in an easy to navigate, virtual piece.

There is a huge variety of excellent games out there begging to be played, with room for new genres to emerge. Our lives can become the real medium for play; engagement of our emotions with this 'game' will not be about shooting virtual robots or chasing imaginary VR bio-zombies. Games could actually change our lives and our world for the better, physically or spiritually.

"We have now grown up; we have been through Photoshop filters and interpretive codes and are now into post modernism or technologicalism, fooling our perceptual systems and becoming more sophisticated and embracing a wider audience – gaining more and more recognition as an art genre in its own right in a similar way art became 'new' when photography happened. Artists are using software as another material in their artistic repertoire, defining structures to define process, each language becoming unique, constraining or allowing flexibility" [43]

8.1 Game Possibilities

In seducing the 'player' to interact with 'Star World' world, I am interpreting reality by appropriating gaming metaphors, design principles, and architectural technologies for alternative kinds of art-related content, creating abstract situations within a cyber landscape enabling engagement with the user.

Cyberspace for me is a window through which I can see a meditation world rendered more sharply defined, isolated and specific. Where things may have a different hierarchy of importance than they do in the experiences of everyday life, or the casual glance. I found in my discovery of digital imagery, a form that had immediacy and a directness that enabled me to develop a tangible and creative contact with the world. Cyberspace, therefore, broadens my vision both metaphorically and literally, the magic of discovery was no longer dominated by my imagination alone or the limitations of a style haunted by past art. I am now much

more of an explorer than I was before, in the literal sense. The monitors' screen becoming a platform through which I explore a world filled with endless possibilities.

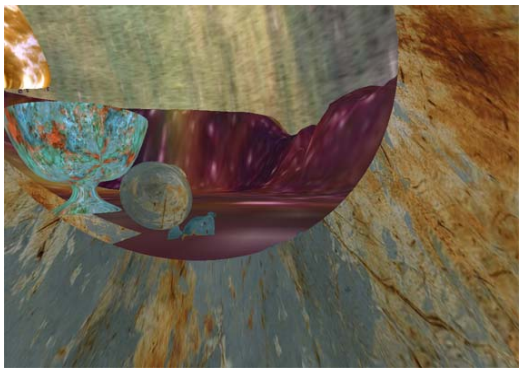


Figure 7 'Star World'
Digital Media Maggie Parker © 2005

Many of the most influential arts movements in the past century – for example Dada, Surrealism, and so many others - arguably, were all playing games of one genre or another. As an artist, I wish to create a new playscape space to play a 'meditation' game.

9. "veduta ideata"

In my "veduta ideata", 'Star World' is a realistically conceived scene that contains wholly imaginary elements. Star maps are textured onto a displacement mapped twig landscape, producing stars wrapped around the bark of trees. Hand made paper scanned in and reproduced digitally becomes a rotating inner sphere, a real world item transformed into a mythical landscape. Slow moving animations create a hypnotic feast for the eyes; the stuff in the digital landscape may not exist, but the spirit of the artefacts exists in the space.

There are few rules to learn in negotiating this space, and very simple controls, move slowly, take your time, enjoy, and relax being the few. There is no avatar represented for you to 'become'; you can image yourself in any guise. The players' role is to become relaxed, safe, de-stressed, quiet, and peaceful. The game structure is a simple landscape with few core mechanics, animations, sound and textures. All players can win if they wish. The physical challenge is timing and rhythm, the exploration challenge becomes negotiating illogical spaces.

There is an economic challenge to achieve balance and care for your-self. Conceptual challenge is the understanding of something new, deduction, observation, and interpretation of this space. The game worlds' mental space is a space that is not-the-real-world, and it is entered by choosing to play. The fantasy environment of the game world setting helps the entertainment, contributes to immersion and fantasy and means it needs to be looked at more with time spent in the world.

9.1 Scale

The scale of the physical dimension in the world is literally the size of the Earth, using the measurements of the Earths' circumference; the world is built using real world measurements. When moving through the world, the size of 'you' is tiny in comparison to the scale of the world; you become a miniscule pixel in a massive world. Navigation through artefacts means the possibility of interfacing with an unreality, not allowed in the real world, seeing an object from a different perspective.

Creating this space causes semiotics structures and a 'code of interaction' to activate a private mind-space, activating meaning in structures in this space. Semiotics is based on a very simple, yet fundamental, yet general notion of a sign that applies to anything that can have meaning for us, either • the signifier - the physical thing in the world that you can perceive, or • the signified - the meaning, in your mind, that you associate with the physical signifier, making a link between the real world and the world of our

individual minds and imaginations. The signifier can be anything we can come to be aware of in the world around us: it can be words, images, textures and structures.

9.2 Perception

In a perceptual snapshot of the signs on offer and their overall meanings suggests to the player, or in other words - connotes, a different relationship that s/he desires and tries to achieve; in turn this results in the construction of a different relationship out of the many that were possible; one that may or may not resemble the one desired, or thought of by the creator.

The boundary at the end of the world is the rotating sphere, creating a temporal dimension in which time becomes meaningless, the player 'going with the flow'. The physical surroundings consist of a terrain, a sphere, animations and sculptures. The player can perceive either a small part of the world, or, if s/he chooses, has the option of navigation to a vantage point at the top of the world to discern their spatial positioning.

9.3 Navigation

This world is created using abstractions, taking place in an unfamiliar world, however, representational knowledge of the real world is used to create navigation, for example to negotiate the controls to turn left, hit the left cursor key. Navigation is also possible by sound direction, clues to other areas being heard and giving intimations of direction. There are a series of puzzles that advance a plot, e.g. find the sound and relax, find the sky and watch it, the player remaining in full control at all times of where s/he wants to go.

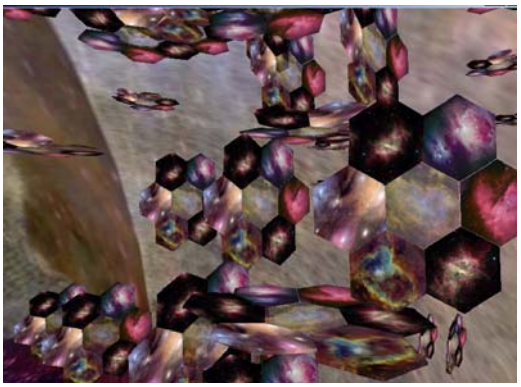


Figure 8 'Star World'
Digital Media Maggie Parker © 2005

Considering all the rhetoric that has been produced about information technologies and their impact on global culture, it's easy to feel exhausted, or at the very least tired, by the prospect of more discourse, some people are stressed, tired and depressed, and some are looking for something to relax with that is not a chemical substance. The ease and pace of navigation through this world is aimed at older people, not hard core game players, and therapists working in alternative practices, giving their patients a space to relax in.

10. Conclusion

Holding one's breath and being centred in balance opens up a profound way of relating to the world. According to some figures, it is believed that stress related disorders affect 80% of the population. Relaxation and meditation techniques offer deep breathing, nose-breathing focus, positive affirmations and other techniques to bring the body and mind into a state of calm. More energy, calmer disposition, more control, clearer thinking.

Improved memory, increased productivity, and enhanced creativity being some of the benefits gained from regular meditation.

"*we are stardust filled with breath, sometimes you have to lie in the grass to see the stars"*

"We are all in the gutter, but some of us are looking at the stars." (Oscar Wilde)

Breathe in life.
Without this breath the dust can never be more than dirt

Breathe in

Breathe out

Breathe in, and hold your breath. Hold it for too long, and you will return to dust. But hold it for a while, and think. And then breathe again

In

Out

Give

Receive

Move

Rest

Cyberspace has the ability to evoke a depth of vision that some may describe as spiritual and a sensibility that somehow transcends the cold harshness of the real world, inducing visual and auditory imagination, provoking dramatic imagination, awakening conceptual imagination, and instigating lateral thinking. Players can gain greater insight into their perceptions, reactions and behaviours in life, and do not have to feel guilty about including a period of relaxation every day.

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Appendix viii

G: Microsoft Corporation

Women in Games International Conference, Texas, USA 2006

Successful Application for Microsoft Scholarship

Received Microsoft Scholarship to attend Austin Women in Games Conference

Document sent to Microsoft representative.

Maggie Parker m.parker@tees.ac.uk

PhD Question:

"Questioning the Notion of Self & Identity in Interactions with Interactive Game Environments by combining Artistic and Meditative Methodologies.

University of Teesside
School of Computing
Borough Road
Middlesbrough
TS1 3BA

Biography:

Maggie is the first Fine Artist (Digital) to be accepted onto the University of Teesside's School of Computing PhD programme, and is part of the SpIDERS research studio, an interdisciplinary team of computer scientists, artists and psychologists at the University of Teesside who are particularly interested in analysing computer games, and is currently in the third year of her doctoral research due for completion September 2006.

Previously employed in the banking and accounting and field after becoming the director of a limited company, Maggie decided to change her direction and returned to education, obtaining a First Class Honours Degree in Art and Design at the University of Sunderland. After gaining her post graduate diploma in Fine Art, she then completed a Masters Degree in Creative Multimedia at the University of Teesside, which re-ignited her interest in 3d modelling software, and the possibilities of artistic uses of virtual environments.

Achieving international success exhibiting her work in galleries and alternative art spaces, she is combining both artistic and empirical methodologies to research mechanisms of self & identity when interacting with virtual computer game environments.

As well as her PhD research work, Maggie is also the creator and curator of the Greig Gallery, part of the School of Computing at the University of Teesside, showcasing both computer game industry concept art work and student produced work.

Research Interest:

Keywords: virtual environments, computer games, art, meditation, relaxation.

One of the favourite playgrounds for mind and body has always been art. The experience of visual, literary and musical forms allow a projection of consciousness into something else, an out-of-body experience that becomes especially heightened with figurative and narrative forms. The persistence of vision of a movie star becomes me. A similar process occurs with written fiction. In each case a combination of imagination and image producing technology works to project a self outside our bodies. Imagine effortlessly re-shaping yourself and your 'appearance' through manipulation of words and images, representations rather than through modification of the physical body. This will allow escape of boundaries and categories.

- What could be learnt from artists?

Artists have arguably been playing games since Duchamp showed his ‘Fountain’ in Paris. Using artistic methodology in investigating alternative realities is a way to approach the implementation of what could be new game genres, introducing differing types of people to the game playing. Artists ‘play’ with software by ‘modding’ games levels, with the artist changing a functional or aesthetic element in an existing game.

The practice of playing a computer game could be regarded as an aesthetic and sometimes creative process, changing time, dimension space and self. To create ‘Star World’ my meditative computer game, artistic practices acquired from art training methodology enabled the production of a computer game environment to test theories of meditation and interaction. In ‘Star World’ you can literally ‘walk’ on the stars. Interacting with the environment created gives space, time and opportunity to meditate and have some time to relax.

It is built – not to shot and kill, available in fantasy games - but to breathe and relax in an easy to navigate, virtual space. In seducing the ‘player’ to interact with ‘Star World’ world, could there be a deeper immersion – a ‘willing suspension of self’ as opposed to ‘a willing suspension of disbelief’ by interpreting reality by appropriating gaming metaphors, design principles, and architectural technologies for alternative kinds of art-related content.

Extensive empirical testing of the virtual environment ‘Star World’ has produced data that is currently in the stage of being analysed and a further prototype is currently being developed. Players can gain greater insight into their perceptions, reactions and behaviours in life, and do not have to feel guilty about including a period of relaxation into their lives every day.

Females traditionally engaged in the daily activity of gathering while their men hunted, ranging around to gather nuts, berries, and found objects that might enhance and beautify her family’s cave etc. Why do we make the assumption that cave men painted the wall art found all over the world, when the women were home taking care of child rearing, when women are seen to be the main providers of home decoration, and to ignore that tradition when the vast majority of women are the game buyers, either for their sons or husbands, or even for themselves, and then also to ignore what games women would play, why they play them and what do they enjoy playing is a mystery to me.

Appendix viii

H: Women in Games Conference

University of Teesside, Middlesbrough 2006

“Poster Presentation”

'Star World'

In my virtual world, you can literally 'walk' on the stars. Taking your place in the environment I have created. This is a virtual environment where you may go to and meditate and have some time to relax.

It is built – not to shot and kill, available in fantasy games - but to breathe and relax in an easy to navigate, virtual piece named 'Star World'. There is a huge variety of excellent games out there begging to be played, with room for new genres to emerge. Our lives can become the real medium for play; engagement of our emotions with this 'game' will not be about shooting virtual robots or chasing imaginary VR bio-zombies. Games could actually change our lives and our world for the better, physically or spiritually.

In seducing the 'player' to interact with 'Star World' world, I am interpreting reality by appropriating gaming metaphors, design principles, and architectural technologies for alternative kinds of art-related content, creating abstract situations within a cyber landscape enabling engagement with the user.

Cyberspace for me is a window through which I can see a meditation world rendered more sharply defined, isolated and specific. Where things may have a different hierarchy of importance than they do in the experiences of everyday life, or in a casual glance. I found in my discovery of digital imagery, a form that had immediacy and a directness that enabled me to develop a tangible and creative contact with the world. Cyberspace, therefore, broadens my vision both metaphorically and literally, the magic of discovery was no longer dominated by my imagination alone or the limitations of a style haunted by past art. I am now much more of an explorer than I was before, in the literal sense. The monitors' screen becoming a platform through which I explore a world filled with endless possibilities.

Many of the most influential arts movements in the past century – for example Dada, Surrealism, and so many others - arguably, were all playing games of one genre or another. As an artist, I wish to [illegible] the experience to play a 'relaxation' game.

In my 'veduta ideata' Star World is a realistically conceived scene that contains wholly imaginary elements. Star maps are textured onto a displacement mapped twig landscape, producing stars wrapped around the bark of trees. Hand made paper scanned in and reproduced digitally becomes a rotating inner sphere, a real world item transformed into a mythical landscape. Slow moving animations create a hypnotic feast for the eyes; the stuff in the digital landscape may not exist, but the rest of the artefacts exists in the space.

There are few rules to learn in negotiating this space, and very simple controls, move slowly, take your time, enjoy, and relax being the few. There is no avatar represented for you to 'become'; you can image yourself in any guise. The players' role is to become relaxed, self-de-stressed, quiet, and peaceful. The game structure is a simple landscape with few core mechanics, animations, sound and textures. All players can visit if they wish.

The physical challenge is timing and rhythm, the exploration challenge becomes negotiating illogical spaces.

There is an economic challenge to achieve balance and care for you. Conceptual challenge is the understanding of something new, deduction, observation, and interpretation of this space. The game worlds' mental space is a space that is not-the-real-world, and it is entered by choosing to play. The fantasy environment of the game world setting helps the entertainment, contributes to immersion and fantasy and means it needs to be looked at more with time spent in the world.

Cyberspace has the ability to evoke a depth of vision that some may describe as spiritual and a sensibility that somehow transcends the cold harshness of the real world. Inherent visual and auditory imagination, provoking dramatic imagination, awakening conceptual imagination, and instigating lateral thinking. Players can gain greater insight into their perceptions, reactions and behaviours in life, and do not have to feel guilty about including a period of relaxation every day.

"We are all in the gutter, but some of us are looking at the stars." (Oscar Wilde)

Breathe in life.
Without this breath the dust can never be more than dirt

Breathe in

Breathe out

Breathe in, and hold your breath. Hold it for too long, and you will return to dust. But hold it for a while, and think. And then breathe again

In

Out

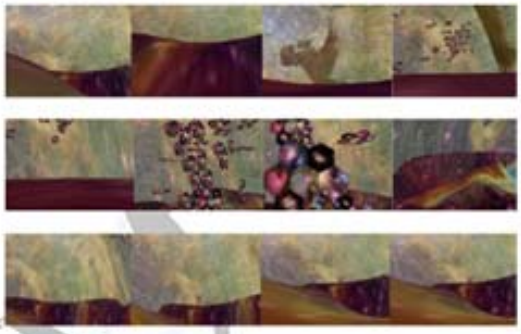
Give

Receive

Have

Rest

Maggie Parker



The scale of the physical dimension in the world is literally the size of the Earth, using the measurements of the Earths' circumference; the world is built using real world measurements. When moving through the world, the size of 'you' is tiny in comparison to the scale of the world; you become a miniscule pixel in a massive world.

Navigation through artefacts means the possibility of interfacing with an unreality, not allowed in the real world, seeing an object from a different perspective.

Creating this space causes semiotics structures and a 'code of interaction' to activate a private mind-space, activating meaning in structures in this space. Semiotics is based on a very simple, yet fundamental, yet general notion of a sign that applies to anything that can have meaning for us: - either • the signifier - the physical thing in the world that you can perceive, or • the signified - the meaning, in your mind, that you associate with the physical signifier, making a link between the real world and the world of our individual minds and imaginations. The signifier can be anything we can come to be aware of in the world around us; it can be words, images, textures and structures.

In a perceptual snapshot of the signs on offer and their overall meanings suggests to the player, or in other words - connotes, a different relationship that s/he desires and tries to achieve; in turn this results in the construction of a different relationship out of the many that were possible; one that may or may not resemble the one desired, or thought of by the creator.

The boundary at the end of the world is the rotating sphere, creating a temporal dimension in which time becomes meaningless, the player 'going with the flow'. The physical surroundings consist of a terrain, a sphere, animations and sculptures. The player can perceive either a small part of the world, or, if s/he chooses, has the option of navigate to a vantage point at the top of the world to discern their current position.

This world is created using abstractions, taking place in an unfamiliar world, however, representational knowledge of the real world is used to create navigation, for example to negotiate the controls to turn left, hit the left cursor key. Navigation is also possible by sound direction, clues to other areas being heard and giving intimations of direction. There are a series of puzzles that advance a plot, e.g. find the sound and relax, find the sky and watch it, the player remaining in full control at all times of where s/he wants to go.

Considering all the rhetoric that has been produced about information technologies and their impact on global culture, it's easy to feel exhausted, or at the very least tired, by the prospect of more discourse, some people are stressed, tired and depressed, and some are looking for something to relax with that is not a chemical substance.
The ease and pace of navigation through this world is aimed at older people, not hard core game players, and therapists working in alternative practices, giving their patients a space to relax in.

Holding one's breath and being centred in balance opens up a profound way of relating to the world. According to some figures, it is believed that stress related disorders affect 80% of the population. Relaxation and meditation techniques offer deep breathing, nose-breathing plus positive affirmations and other techniques to bring the body and mind into a state of calm. More energy, calmer disposition, more control, clearer thinking, improved memory, increased productivity, and enhanced creativity being some of the benefits gained from regular meditation.

Appendix viii

I: Media Terra Conference

Technopolis, Athens, Greece 2006

“Game-like art/Art-like game: Reflections of a Star World in a StarGlass”

"Game-like art/Art-like game: Reflections of a Star World in a StarGlass"

Dew Harrison
Robert Gordon University
{d.harrison-g@rgu.ac.uk}

Maggie Parker
University of Teesside SpIDERS Studio
{m.parker@tees.ac.uk}

Abstract

This paper presents two research sides of the same result, a game-like art work / an art-like game. Design ideas within the Star World are reflected in the StarGlass, both pieces have an aesthetic and game strategy outside the usual gaming industry conventions. Both allow the player to take their time and explore the given environment as part of the game play. The first half of the paper concerns the StarGlass art work and shows how user engagement was encouraged through means other than the usual gaming factors. It was never considered as a 'game' but as a further exposition of the ideas of Marcel Duchamp in alignment with post-Conceptual art and new media. The second half refers to the creation of Star World, a stress free game environment for players who want to relax in their leisure time. This game uses visual aesthetics, often abstract and painterly, it extends game design into something that could easily be situated in an art space and begs the question 'why aren't creative games shown in white cube galleries?'

Keywords: Duchamp, exploration, new media, virtual environment, computer games, art, relaxation, seduction.

The Interaction of Art and Game: StarGlass

'Interaction', in its purest form a dialogue or conversation between two people, is a term generally understood as the way in which someone accesses a computer for information, a human and machine event. It has resonance in electronic gaming as a means of following branching narratives in order to complete tasks and it can also be applied in the fine art field. Here it stands as a means of audience engagement with a work, and thus, with the artist involved. 'Performance' can enable an audience to interact with the artist as a form of social engagement, as can an 'installation' where the work is completed by the viewer's actions and responses. (Bouriaud 2002) Many art works of this kind are computer-mediated and interaction with a computer interface is a prominent method of experiencing Digital Art. (Paul 2003) How have artists arrived at this technically bound activity from the Modernist constraints of medium specificity, of painting and sculpture? Artists have always experimented with new technologies, but the sea-change in thinking from visual representation and aesthetics to that of the idea encapsulated within an object, through to Conceptual Art, is deemed to have resulted from the work of Marcel Duchamp (Figure 1).

Figure1 Photograph of Duchamp by Man Ray

This acts as the entrance to StarGlass

Duchamp, as with many artists in the wealthy West at the beginning of the 20th Century, was excited by new advances in machinery and technology, evidenced in the everyday and rapidly affecting

cultural life-styles. The Dadaists and Futurists incorporated a machine aesthetic in their work in an attempt to respond to modern life, the Surrealists preferred to explore the new science of psychology after Freud and delved into the subconscious dream world as the antitheses of industrialisation, mass-production, and war. Duchamp, starting with the Impressionists, worked through all the 'isms' of his time without being a member of any. As an individual thinker and strategic game player (thank you chess!) he arrived at his 'Ready-made' which steered a new course for art thinking - but it was his Large Glass, "La Mariée mise à nu par ses célibataires, même" or "The Bride stripped bare by her bachelors, even" which truly aligned this new 'idea art' thinking with new technologies and initiated the 'post-modern' approach to practice. In order to explore the infinite capabilities of the digital computer as an art medium beyond the visual aesthetic and to further understandings of Conceptual Art within a contemporary practice – I transposed the Large Glass (Figure 2) into an interactive Hypermedia System, "StarGlass". (Harrison 2005)

Figure 2 Marcel Duchamp - , "La Mariée mise à nu par ses célibataires, même" or "The Bride stripped bare by her bachelors, even". 'The Large Glass", 1915-23… The black line drawings indicate where the missing elements would have been placed to complete the 'machine'

Curiously, and without intent, the creation of this work invested heavily in researching user interaction and in so doing applied many of the aspects of video game design. Non-linear narrativity and subtle navigational aids became paramount, and, as this was a Duchampian electronic object, elements of play, chance and wit had to be incorporated into the overall design. It is not 'goal-oriented' nor does speed matter and there are no higher levels of play involved, but discovering the relationships between objects brings understanding and these little epiphanies can be seen as 'goals' or levels in themselves. You could say that the aim of this computer game is to make sense of it through exploration, the narrative is totally Duchamp's, and the strategy? No, not chess. The strategy is the semantic association of the multimedia objects within it, as presented in the initial vision for the 'all-purpose machine' to augment human thinking – the computer. (Vannenar Bush)

According to Bourriaud (2002), "Artistic activity is a game, whose forms, patterns and functions develop and evolve according to periods and social contexts; it is not an immutable essence." And in agreement with this somewhat Duchampian comment, the StarGlass structure plays out as a game, it also plays with you, in that it purports to offer an individual reading of the work tailored according to your astrological birth characteristics. Of course, every one 'reads' an art work differently and so keeps the piece alive and open to interpretation, "a work of art

is dependent on the explosion made by the onlooker", (Duchamp 1996) but StarGlass gives an ironic view of this understanding. The screen image is of a black sky full of stars in their planetary positions, by rolling over them and around the sky the stars link into astrological clusters Leo, Virgo etc., clicking on one (their own?) particular birth sign, takes the viewer into the mind of Duchamp and a 21st century Large Glass.

Figure 3 Screen grab showing the constellations in the night sky of StarGlass

The Large Glass is the accumulation of all Duchamp's thoughts and ideas, of all his work to that point, (The Large Glass) it was 'definitively unfinished' and represented an erotic love machine that could only ever work 'conceptually' and even then, only with its accompanying boxes of notes. An odd looking art work, a pane of glass, metal, varnish and dust that is 'neither painting nor sculpture' but, more importantly, signifies the 4th dimension of space-time and cyberspace technology. The pane of glass is split into two halves with the 'Bride' in the top with her dreamy thought cloud and the mechanical bachelors with their weird devices below, ineptly attempting to interact with her. On a mouse click the stars from the chosen birth sign (Figure 3) fly into a now visible image of the Large Glass and sit waiting for the next user move. Rolling onto one of these bright stars lights up 3 smaller ones and rolling over one of the smaller stars brings an image of a Duchamp work, a piece of text, a website URL, (Deconstructing Duchamp) a painting etc. Rolling onto one of the 3 smaller stars not only proffers a Duchampian object but a further 2 small stars – a different trio than those first chosen.

The objects are interlinked and semantically associated, often the links are obvious, for example, 5 items are previous paintings and a drawing of the Bride herself. More often the relationships between the star objects are fairly obscure and the viewer has to work in order to connect them into a thought trail. There are around 300 multimedia items behind the StarGlass interface which are cross-connected into a complex web of ideas – in order to gain some insight into Duchamp land the viewer needs to navigate through quite a number of them first. This could be paralleled with Pokemon and the 'got to catch 'em all' mentality! The playful star chase can continue endlessly, the game ending when the viewer 'quits', but can be quite frustrating when realising that returning to earlier star patterns can produce different images the second time around. The paths change as the computer is programmed to trip the system and offer a 'chance' star object every so often. This navigation activity is not just a way to keep a user on their toes but is absolutely in line with the Duchampian aspects of play, chance, and wit while highlighting their attention to the number 3.

Figure 4 Screen grab of the Virgo birth sign stars arriving at the Large Glass ready for play

Number 3 is an important numeral in the Duchamp mythology being a sign of harmony and balance where, along Hegelian lines, 1 = thesis, 2 = antithesis and 3 = synthesis. A further understanding of the number 3 takes it into the area of Derridean deconstruction, the dynamic space where conceptual oppositions meet and depend on each other for definition – speech versus writing, masculine versus feminine, the Bride versus her bachelors, even. Stars are a major part of the Duchampian world and feature frequently in his work (Duchamp) but signify other meanings outside the art field concerning the flat-glass computer 'interface', opaque to the cyberspace behind it. The conceptual complexity of the Large Glass is emulated to some degree in the StarGlass, and the star map navigation system is a good example of this (Figure 4). The stars work as a Duchampian symbol and the star-mapping acts conceptually as a signifier to the bridge between art and science, by relating to the original methods for augmenting human memory (the initial intent of interactive hypermedia) concerning planetary memory theatres of astral images and star clusters. (Camillo b1480)

Unlike most computer games, this work allows the user to move as slowly as they like, there is no time limit, no urgency and no opponent to fight. On the surface it is small and simple to move through, requiring little skill from the viewer with nothing to shoot at or drive through safely, but beneath the screen, through the looking glass, the items interweave conceptually into a dense semantic net. StarGlass is a challenge to unravel where each visit brings new understandings of its content and may even reveal some item not seen before. The game-like nature of the work is absolutely in keeping both with its subject and with the media supporting it. The planetary memory theatres, mentioned earlier, derived from the oral cultures of Greece and Rome where 'mnemotechnics' were practiced as memory training techniques. Such methods for impressing places and images in memory continued into the Renaissance in the understanding that memory was the vital key to making knowledge useful, and knowledge was power. This 'remembering by association' was unnecessary when language could be written and printed for reading. Bolter, (1984), states that "An oral culture fosters a kind of associative thinking that is less common in a culture of print." But it is just that associative thinking that led to the creation of non-linear computer memory and digital culture.

Figure 5 Screen grab showing Virgoan stars (pinkish), the 3 smaller stars (bluish, on left) and a Duchampian object (Étant Donnés)

The StarGlass mapping system and visual aesthetic therefore directly relates to the pieces' structured content, the subject (Duchamp's mind) and the medium supporting it. The entire work is filled with complex signs and signifiers (Figure 5) and that is itself in tune with the Large Glass. Such holistic design is not considered within the gaming industry where the aim is towards 3D cinematic realism, a literal alternative world, as a way of immersing the user to enrich game-play. A game usually comprises of a re-written narrative, often taken from cinema, which is given a readymade aesthetic with one of a set number of strategies for play. Herein then, lies the difference between art and game. Making a visual other world with an avatar for movement is a barrier to mediation, immersion for a more engaged experience of a game, cannot take place when the viewer is so aware of their distance. Audiences have been trained to move into a screen scenario through watching films, they easily transmigrate into a movie overlooking the projector and film reel technology behind it. If we know how to do this in a cinema context, then why not with a computer game?

The interactivity needed to move that avatar disrupts the mesmeric state, identified by Paul Virilio as 'picnoleptic' (Virilio 1991) that subsumes the cognitive subject within the new media technology and content, producing a techno-daydream in an active mind. Interactivity can then be understood as a bar to engagement with a computer game and unless there is a move to researching direct physical connection devices between human and machine, as envisioned in the Cronenberg film "eXistenZ" (1999), other methods of engagement may need to be explored. StarGlass aims to engage the viewer with its puzzling complexity and holds their interest cerebrally, there is no intent of transporting them to another world, and they do not need to do more than roll the mouse around until they find something they want to focus on and so click to enlarge it. Perhaps, within a game, if there were not so many actions, and choices needed before each move, then the players would act more slowly and 'think' their involvement into the game rather than 'doing' it physically. Perhaps it is not so much about attaining cinematic realism and attempting to overcome the intrusion of the control panel, aided only with a mixture of dexterity and familiarity, but in heightened cognitive activity that immersion may be facilitated and game experience enhanced.

New ideas of immersion for improved game play may be discovered by artists who are concerned with social engagement and Relational Art. In a similar way to Duchamp et al finding a way through the limitations and constraints of Modernism by exploring outside their field, games designers would do well to research other possibilities than those set by the industry. StarGlass can be understood as a 'game' but stays as an art piece because it does not follow the usual conventions. The facilitation of exploration, cognitive complexity, slow play, contemplation and serendipity are not video game standards. Maggie Parker's "Star World" computer game, however, purposefully allows for all of this and more, with a painterly and often abstract aesthetic, this game ventures into new gaming territory. "Star World" looks more like an art work than "StarGlass".

The Interaction of Art and Game: Star World

The practice of playing a computer game could be regarded as an aesthetic and sometimes creative process, changing time, dimension, space and self. In creating a computer game, artistic practices enabled the creation of

'Star World' as an alternative to the Cartesian dualistic view. In 'Star World' the 'player' or 'viewer' can literally 'walk' on the stars. Taking your place in the environment gives the 'player' the space, time and opportunity in an alternative virtual environment to meditate and have some time to relax. In seducing the 'player' to interact with 'Star World' as a game construct, reality is interpreted by appropriating gaming metaphors, design principles, and architectural technologies for alternative kinds of art-related content, creating abstract situations within a cyber landscape enabling engagement with the user.

Many of the most influential arts movements in the past century – for example Dadaism, Surrealism, and so many others - arguably, were all playing games of one genre or another. Would the creation of an alternative playscape space enable the 'player' viewer to play a seductive, meditation game? The impact of virtual reality and cyber-interaction, within the gaming industry has enabled the beginning of changing consciousness when game playing - the participant 'becomes' the car rally driver for example - allowing the user to inter-act directly within a three-dimensional space. What would happen if, when working as an artist, one attempted to re-order reality by appropriating gaming metaphors, design principles, or core technologies for alternative kinds of art-related content creating abstract situations within a cyberlandscape enabling engagement on a differing emotional level with the player?

The art movements that grew from Dadaism, and Surrealism for example, explored such juxtapositions as fur lined teacups (Figure 6) and new ways of describing space.

Figure 6 'Fur-Lined Tea-cup' Meret Oppenheim 1936

This was explored by the artist Marcel Duchamp. (Figure 7) in both 2 dimensional space with his piece,

Figure 7 'Nude Descending a Staircase No 2' Marcel Duchamp

'Nude Descending a Staircase' where he was experimenting with movement through space and 3 dimensional space when he experimented with his piece ''The Bride Stripped Bare by Her Bachelors, Even'. (Figure 2) This piece is also an enquiry into what art can do. It is an attempt to show that artists can depict invisible worlds, not just visible ones, and that art can engage the imagination and the intellect, not just the eyes'. The practice of playing a computer game could also be regarded as an aesthetic and sometimes creative process, changing time, dimension space and self.

Computer Games are often wonderful ways of modelling or extending existing aptitudes and behaviours to become

more than symbolic and actually break down the simplicity of self-imposed rules and structures that exist in the so-called 'real' world' to offer means of escape. "…Videogames at their best build awe-inspiring spaces from immaterial light." (Poole, 2000) He continues "People are creating their own versions of games that have other messages to disseminate throughout the inter-net. Creating meandering wanderings around a virtual universe to create a story unique to themselves, subliminally affecting 'mind' and 'self'" "Finding other paths from darkened bedrooms into a bright new world in voracious pursuit of new games and roles to play". (Pratchett, 2005)

What can we do when playing games? Just a few things we can do –

- Command armies
- Rule Worlds
- Change identities
- Navigate through unfamiliar territory
- Shoot, maim and kill 'people'
- Build cities
- Solve puzzles

There are other things to do in a virtual environment, Osmose (1995) and Ephémère (1998) (Figure 8) are interactive environments created by painter Char Davies, who talks about these pieces as being "My most recent attempts to distil and amplify the sensations and emotions of being conscious, embodied and mortal, i.e. how it feels to be alive here now among all this, immersed in the vast, multi-channelled flow of life through space and time".

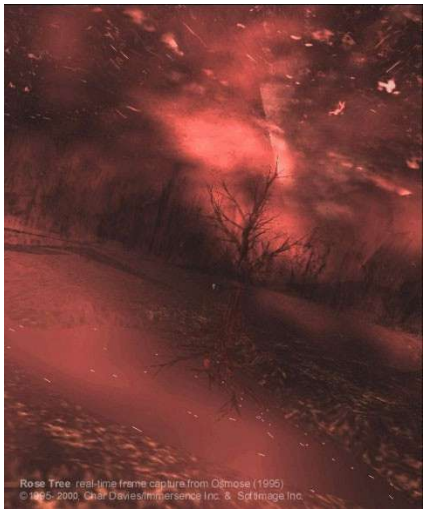


Figure 8 'Osmose' Screenshot Char Davies

She goes on to say, "Here, space is not perceived as empty or passive, but sensually embraces, envelops the whole body, inviting reverie, and surrender of the self, in rapture of the deep." (Davies 2003)

Would a 3D interactive environment created by combining artistic and scientific methodology, create a computer game environment which invites meditation and peace, gently seducing the player into a relaxed state, inviting game players to lose their sense of self and change their notion of 'self' & 'self identity' In 'seducing' rather than "alerting" the person to interact with the world, would the player be persuaded to alter their emotional 'self'? Computer games can be used to perform and create other meanings; screenshots shown here, (Figure 9) is a screenshot illustrating a scene from the computer game 'Rez'

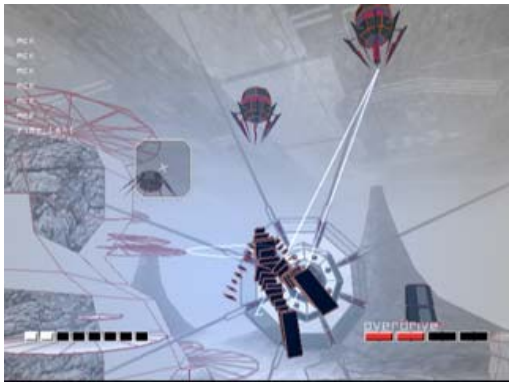


Figure 9 Rez Screenshot Tetsuya Mizuguchi

Tetsuya Mizuguchi, game developer, created the game "Rez" whose aesthetic levels were derived from the synesthesia school of artists, painters, and composers, and painterly aesthetic of Kandinsky. In "Rez" we find a music shooter that immerses the player into a cyber world. Contained in this virtual world are:-

- Sounds
- Visual Images
- Brilliant colours
- Innovative designs
- Vibrations

The visuals look simply astonishing and work in conjunction with the driving music to creating an intense feel that makes the player feel like they are inside a living mainframe. This can become overwhelming, causing partial sensory overload at points, with dozens of abstract shapes flying towards the player, which the player then 'shoots' causing abstract shapes and colours combined with sound to explode on the screen. (Sonic Team 2002) This type of content in a virtual environment is produced in an "aesthetically pleasing grouping of abstract objects, creating perceptual puzzles." (Ramachandran, 2003) In creating a computer game, using artistic practices garnered from an art-practice methodology, enabled the opportunity of creating games in an alternative space. In 'Star World' the player literally 'walks' on the stars.

'Star World' is built – not to shot and kill, available in fantasy games - but to enable the player to breathe and relax in an easy to navigate, virtual piece. In seducing the 'player' to interact with 'Star World' world, reality is interpreted by appropriating gaming metaphors, design principles, and architectural technologies for alternative kinds of art-related content, creating abstract situations within a cyber landscape enabling engagement with the user. Many of the most influential arts movements in the past century – for example Dada, Surrealism, and so many others - arguably, were all playing games of one genre or another. 'Playing' as an artist of 'Dadaism', enabled the creation of a new playscape space, this time 'playing' with seduction and relaxation. Lauria asks "What forms of beauty might we experience in VR? Is the grasping of beauty metaphysics itself? Is there a seduction factor to be considered here that could lead to an abuse of a deeper reality?" (Lauria, 1997)

Seduction is defined in this work as a process of deliberately enticing a person into a specific act, seducing the player into a world they would normally not be part of. An example of that would be 'seducing' a non game player to inter-act with a computer game environment. It is a specific form of temptation, an inducement to persuade someone to change their behaviour to meet the desires of the seducer. 'Many social behaviour theorists classify seduction as a specialized form of persuasion, here being defined as a form of influence. It is the process of guiding people toward the adoption of an idea, attitude, or action by rational and symbolic (though not only logical) means. It is a problem-solving strategy, and relies on "appeals" rather than force. Seduction can also be viewed as a form of power that relies on psychological mastery rather than the use of coercive power, money, or intellectual appeals.' Could seduction and meditation help in the 'willing suspension of disbelief?' (Coleridge, 1817) In the same way art becomes legitimised by critical discourse, game art, in joining the critical debate becomes embedded in the cultural and semiotic analysis of the structure and texture of the game, indeed, the immense

popularity of gaming is now producing an aesthetically aware population.

This "veduta ideata", ‘Star World’ is a realistically conceived scene that contains wholly imaginary elements. Star maps are textured onto a displacement mapped twig landscape, producing stars wrapped around the bark of trees. Hand made paper scanned in and reproduced digitally becomes a rotating inner sphere, a real world item transformed into a mythical landscape. Slow moving animations (Figure 10) create a hypnotic feast for the eyes; the stuff in the digital landscape may not exist, but the spirit of the artefacts exists in the space.

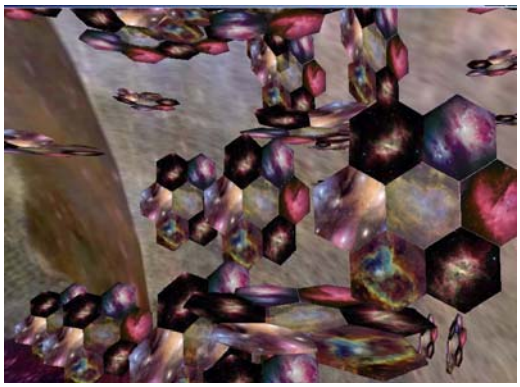


Figure 10 ‘Star World’ Screenshot Maggie Parker © 2005

The practice of playing a computer game could be regarded as an aesthetic and sometimes creative process, changing time, dimension space and self. There are few rules to learn in negotiating this space, and very simple controls, move slowly, take time to enjoy the environment, enjoy, and relax becoming imperatives. There is no avatar represented for the player to ‘become’; the player imagining their own avatar in any guise. The players’ role is to become relaxed, safe, de-stressed, quiet, and peaceful. The game structure is a simple landscape with few core mechanics, animations, sound and textures. All players can win if they wish. The physical challenge is timing and rhythm, the exploration challenge becomes negotiating illogical spaces. (Figure 11)

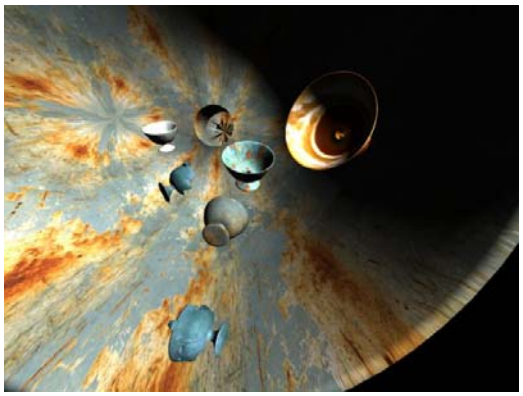


Figure 11 ‘Star World’ Screenshot Maggie Parker © 2005

There is an economic challenge to achieve balance and care for your emotions. Conceptual challenge is the understanding of something new, deduction, observation, and interpretation of this space. The game worlds’ mental space is a space that is not-the-real-world, and it is entered by choosing to play. The fantasy environment of the game world setting helps the entertainment, contributes to immersion and fantasy and means it needs to be looked at more with time spent in the world.

The scale of the physical dimension in the world is literally the size of the Earth, using the measurements of the Earths’ circumference; the world is built using real world measurements. When moving through the world, the size of the player is tiny in comparison to the scale of the world; they become a miniscule pixel in a massive world. Navigation through artefacts means the possibility of interfacing with an unreality, not allowed in the real world, seeing an object from a different perspective. (Figure 12)

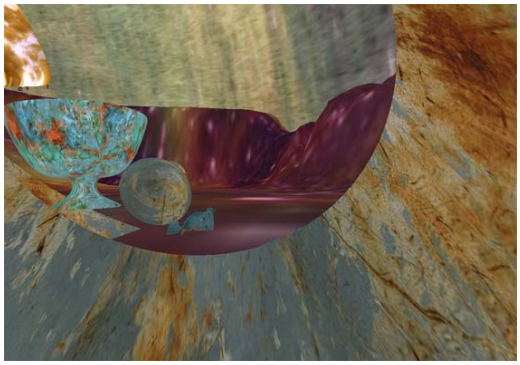


Figure 12 ‘Star World’ Screenshot Maggie Parker © 2005

The boundary at the end of the world is the rotating sphere, creating a temporal dimension in which time becomes meaningless, the player ‘going with the flow’. The physical surroundings consist of a terrain, a sphere, animations and sculptures. The player can perceive either a small part of the world, or, if s/he chooses, has the option of navigation to a vantage point at the top of the world to discern their spatial positioning. This world is created using abstractions, taking place in an unfamiliar world, however, representational knowledge of the real world is used to create navigation, for example to negotiate the controls to turn left, hit the left cursor key. Navigation is also possible by sound direction, clues to other areas being heard and giving intimations of direction. There are a series of puzzles that advance a plot, e.g. find the sound and relax, find the sky and watch it, the player remaining in full control at all times of where s/he wants to go.

There are many differing ways to relate to the world. According to some figures, more than a third of UK workers have less than two hours of leisure time on a typical weekday, while only three in ten think that they have achieved a good balance between work and leisure time. (Leisure Time UK 2006) Relaxation and meditation techniques offer deep breathing, nose-breathing focus, positive affirmations and other techniques to bring the body and mind into a state of calm. More energy, calmer disposition, more control, clearer thinking, improved memory, increased productivity, and enhanced creativity being some of the benefits gained from regular meditation.

Our lives can become the real medium for play; engagement of our emotions with this ‘game’ will not be about shooting virtual robots or chasing imaginary VR bio-zombies (Figure 13). Games could actually change our lives and our world for the better, physically or spiritually.

”we are stardust filled with breath,

sometimes you have to lie in the grass to see the stars” (Parker, 2005)

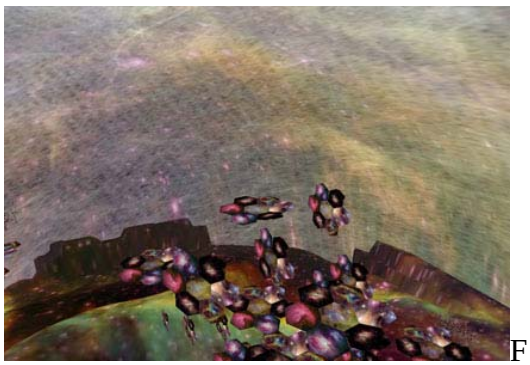


Figure 13 ‘Star World’ Screenshot Maggie Parker © 2005

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Bourriaud, Nicolas (2002) *“Relational Aesthetics”* Paris: Les presses du reel, p.11. Duchamp’s interest in the role of the viewer is evident in his works Étant Donnés, to be looked at with one eye close up to, for almost an hour and the Large Glass. Bourriaud refers to the Duchamp quote “All in all, the creative act is not performed by the artist alone; the spectator brings the work in contact with the external world by deciphering and interpreting its inner qualifications and thus adds his contribution to the creative act” from a lecture called “The

Creative Act" published in Art News (New York) 56, No.4 summer 1957, pp.28-29.

Camillo, Guilio (b1480) I refer here to the planetary memory theatre of Guilio Camillo (b.1480) and to Giordano Bruno's (b.1548) "Shadows" or astral memory wheels.

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"Deconstructing Duchamp" Clicking on a website box takes the viewer into "Deconstructing Duchamp" an earlier work which transposed the Large Glass into 25 separate elements networked across the Internet. It is still slowly decomposing as sites close down. This was a collaboration with 25 artists on a global scale where each took one element of the Glass to respond to and created a website which then cross-connected with some of the others, wherever a semantic association was evident.

Duchamp uses stars as literary allusions e.g. the 'Headlight Child' in the Green Box is described as a comet. Man Ray's photographic portrait of him has a shaved shooting star at the back of his head (see Fig.1). Stars also appear in 'The', 'Genre Allegory', 'Abraham Lincoln' and feature as the 'Milky Way' in the Large Glass

.Duchamp, Marcel (1996) *"An Interview with Marcel Duchamp"* by Ashton, D. Studio International, 171 (878), June, London, p.245.

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The Large Glass was under construction between 1915 and 1923 but remained incomplete with a number of 'elements' missing. The Large Glass referred to and was informed by, all his work including two boxes of notes and sketches, the 'Green Box' of 1914 and the 'White Box' published later in 1967.

Vannenar Bush I refer here to Vannenar Bush's 'Memex', a machine envisioned but never built as a mechanical analogy to the human mind, which operates by association. The "all-purpose machine" is a reference to Alan Turing's 'Universal Turing Machine', which informed the 'von Neumann architecture' of the digital computer.

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Appendix viii

J: UK Academy for Information Systems Conference

10th Annual Conference, University of Northumbria 2006

Digital Art Research, or "I Can't See the Image for the Words”

DIGITAL ART RESEARCH, OR "I CAN'T SEE THE IMAGE FOR THE WORDS"

Briony J Oates* & Maggie Parker
School of Computing
University of Teesside
Middlesbrough,
TS1 3BA
United Kingdom

*For all correspondence
B.J.Oates@tees.ac.uk **M.Parker@tees.ac.uk**
Tel: 01642 218121 Fax: 01642 230527

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DIGITAL ART RESEARCH, OR "I CAN'T SEE THE IMAGE FOR THE WORDS"

ABSTRACT

There have been recent discussions in the literature about the scope of the IS discipline and IS research. In this paper we focus on one aspect of the use of ICTs which so far has received little attention: digital art. We explain why we see it as part of IS, discuss the nature of digital art and the demand for digital art research, and reflect on some lessons learned from our experiences of carrying out digital art research within a university computing department. We hope that the paper will broaden readers' appreciation of the purpose and relevance of IS research and stimulate further research into digital art.

INTRODUCTION

Information systems (IS) research is concerned with the development and use of information systems by individuals, organisations and society. Usually these information systems are based on ICTs (information and communication technology). There have been recent discussions in the literature about the scope of the IS discipline and IS research (Benbasat & Zmud, 2003; Orlikowski & Iacono, 2001; Weber, 2003). Some want to draw boundaries around the subject to define what is or is not IS, but we would argue against this, since the potential uses and effects of ICT-based systems in different contexts are neither fully known nor completely understood (see also Westland, 2004).

There have also been regular discussions about the need for both rigour and relevance in IS research (cf. e.g., Fitzgerald, 2003; Keen, 1991; Kock & Lau, 2001; MISQ, 1999; Robey & Markus, 1998; Senn, 1998). Much of the discussion about rigour arises because different communities within IS work within different philosophical paradigms (e.g. positivism, interpretivism and critical research), with different views about ontology and epistemology. In the case of relevance, few researchers explain *relevance to whom*. The common assumption is relevance to *'practitioners'*, but again these are left undefined. Many assume these practitioners are managers in an organisation. Indeed some, particularly in the US, equate 'information systems' to 'management information systems'. However, 'practitioners' can also include teachers using ICTs to aid student learning, community workers helping disadvantaged communities to use ICTs to overcome barriers such as geographical or psychological isolation and systems developers who plan, analyse, design, implement and maintain information systems. Since computers and other information and communication technologies are now so pervasive, in the developed world at least, much IS research has the potential to be relevant to *someone*.

In this paper we seek to expand the discussion on IS research by focusing on one aspect of the use of ICTs which so far has received little attention in the IS literature: digital art. We explain why we see it as part of IS, discuss its nature and the demand for research into it, and reflect on some lessons learned from our experiences of carrying out digital art research within a university computing department. We intend that the paper will broaden readers' appreciation of the purpose and relevance of IS research and hope it will stimulate further research into digital art.

DIGITAL ART

Digital art involves the use of ICTs to inform, question or illuminate. Artists work with images (or sound), and are able to construct meaning based on their understanding of the social relevance of image and perception. Digital art can therefore be seen as a kind of information system: data becomes information though people's perception and application of meaning. Its 'users' include art critics, art historians, gallery owners, museum curators and anyone who likes to purchase or view pieces of art, or who has enjoyed films based on computer-generated art, e.g. 'Finding Nemo' (www.pixar.com/featurefilms/nemo). As the image acquires increasing importance in mass culture, artists and their works are becoming increasingly powerful. They should be studied by IS researchers.

Digital techniques and media have transformed traditional forms of art such as printing, painting, photography and sculpture (Paul, 2003). In this paper we are concerned, however, with the new forms of art which are made possible by digital technologies, including net art, software art, digital installation and virtual reality (Paul, 2003).

For example, Maggie Parker is a digital artist currently working on her PhD with the University of Teesside's School of Computing. Trained as a painter and printmaker, Maggie turned to the digital world to create an artistic environment that would be impossible to re-produce in a 'real world' scenario. Working with a highly technical medium creates its own problems as opposed to working with paint; however the possibilities for the medium are manifold, including creating interactive environment pieces which can be navigated through in a way that is unimaginable when viewing a painting. In the creation of her piece 'Star World', an interactive meditative environment, the user is able to use mouse controls to navigate and control the speed of the way through, taking control away from the artist and exploring aesthetic uses of computer software.

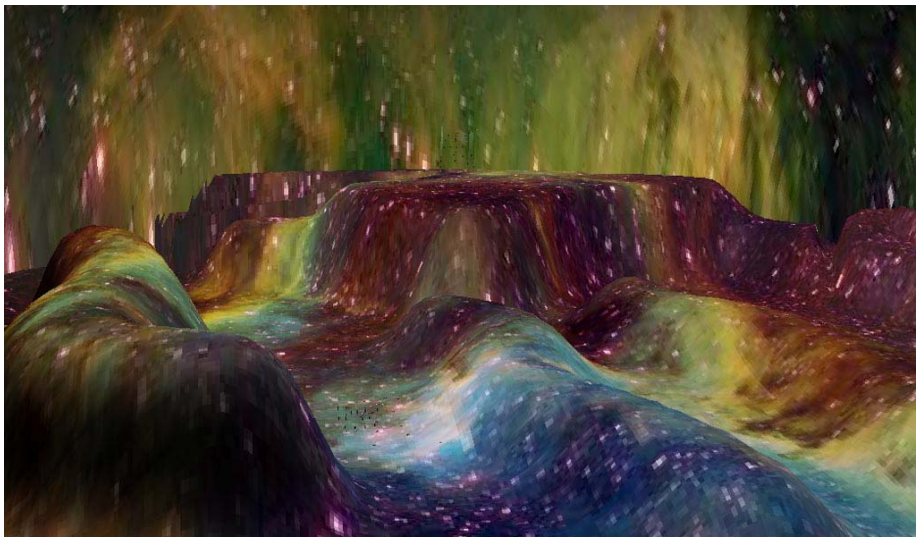

Figure 1: 'Star World', an interactive meditative environment

The use of computers and digital technology for the production of artworks can be traced back to the 1960s, with, for example, an exhibition of computer graphics in art by Georg Nees, in 1965, the founding of the interdisciplinary art, science and technology journal *Leonardo* in 1967 and the establishment of the Computer Arts Society in 1969. The increasing availability and reduction in costs of hardware and software, the spread of the

Internet and World Wide Web, and the popularity of computer-generated animations and games have all contributed to growing interest in digital art.
Some argue that it has not yet reached maturity as an art form. For example, Robert Fitzpatrick, director of Chicago's Museum of Contemporary Art argues that digital art is a potentially powerful, but still embryonic medium, likening it to the evolution of photography in the 19th Century. "Photography began by simply capturing a building or a person, and it took decades for artists to develop the medium as a brilliant, original art form" (Loring, 2001). Although he believes that some digital art techniques, such as virtual reality have artistic potential, "right now the technology is primarily being used for Sony PlayStations and things like that; artistically it has not reached a level of meaningful content yet." (Loring, 2001)
However others maintain digital art is already having a profound impact on artistic expression:

> "Over the past decade the world of contemporary art has experienced the beginnings of a tectonic shift. Digital technology has arrived as a component of everyday life and contemporary art on a global scale… Artists are adopting new technologies in the studio, deploying them in the gallery, inhabiting them through the Internet, and making artwork that reflects our technology-saturated society in a stunning range of ways." (Catalogue for *010101: Art in Technological Times*, an exhibition at the San Francisco Museum of Modern Art, 2001).

For example, BALTIC (Centre for Contemporary Art, Gateshead) has recently exhibited the work of James Hutchinson, who combines an interest in drawing with his skills in manipulating images through computer software. His work 'Drawn' explores what happens when late-night doodles using pencil on paper meet the latest cutting edge technology. Darko Fritz is currently BALTIC's artist-in-residence. He uses architecture, organic materials, public transportation systems, communications systems (TV, radio, newspapers, the Internet, fax) as well as traditional art forms such as printing, photography and video to investigate mobility and life in the digital age.
Digital technology offers new possibilities for artists to explore, including (Paul, 2003): interactivity, participation, dynamic nature and customizability

- *Interactivity*. Although a viewer of any artwork can be said to be interact with it, digital art often goes beyond mental interaction to incorporate physical interaction – the viewer is able to interact physically with a digital piece, via a mouse or movement. Control over content, context and time can be transferred from the artist to the audience (Paul, 2003). For example, Jeffrey Shaw's T*he Legible City* (1988-91), involved the user sitting on a (fixed-down) bicycle. A computer translated the physical movements of the pedals and handle-bars to change the user's view and enable apparent navigation of a 'city' – made up of computer-generated three-dimensional letters. Digital artists producing interactive works are therefore working with systems that involve people. No longer are 'users' the recipients of an artist's 'vision', they are a part of it, part of a system. Hence digital art can often be seen as a socio-technical system, like the organisational systems normally studied by IS researchers.
- *Customization*. If an artwork reacts to the actions of different viewers/users then it is customizable – no two viewers need see the same thing. Customization of websites and software has received some attention in the IS literature. Digital art offers a new domain for the study of the possibilities of customization.

- *Participation*. Through interactivity, people participate in digital art (Paul, 2003). Sometimes they can participate within parameters set by the artist, other times they create the parameters themselves. In some works they become remote participants in time-based artistic performances. With some artworks there is only a blank screen unless the viewer does something. Some digital artists also work collaboratively with people during the development of a piece. If a finished artwork is to involve the audience as a part of it, then artists may need to involve others during its development. Through collaboration the assumptions that otherwise obscure creativity can be explored and challenged.
- *Dynamic nature*. The use of digital technology enables artworks to react to changing data flows and the real-time transmission of data (Paul, 2003). For example, Lynn Hershman's *Synthia* (2001) shows a virtual character whose actions are related to the stock market fluctuations (if the market goes up, she dances, if it goes down she chain smokes, and so on). Hence one information system (an artwork) is linked to another information system (the stock market).

New forms of art, based on digital technology, have, however, also brought with them new questions. For example (Loring, 2001):

- Is it art?
- Where is the "original" work that produces a four-dimensional virtual-reality space?
- How can a work of art created for the Internet be preserved when browsers are frequently updated and websites evolve or disappear?
- How can museums and galleries curate digital art?
- How can one buy and sell such work?
-

Collaboration and participation in the creation of digital art also change perceptions about ownership, authorship, means of manufacture and ideas of function and value. Artists working with others have sought to make dialogue, negotiation and exchange central to their practice. But the danger inherent in such an approach is the assumption of 'shared' values within which such negotiation takes place, and at worst, the imposition of these values. Indeed it is across these assumed values that notions such as 'artist', 'user' and 'work' are formed. Rather than uncritically celebrating values, genuine 'user' involvement should challenge these values and assumptions. Users should not be recipients of an artist's 'vision' but a dynamic constituent of the system. IS researchers could draw on their current understanding of user participation in systems development to investigate participation in the creation of digital artistic works, or use previous IS research on Habermas' theory of communicative action to understand the dialogue between artists and co-producers.

In this world of global networking, the stereotypical notion of a lone artist working in a garret becomes unreasonable. Indeed within a world where collaboration has become a necessary mode of practise it has become increasingly apparent that the role of an 'artist' is not the provider of a solitary voice but a part of a team. Artists have worked in creative partnerships with private companies and schools, and with professionals such as doctors, scientists and architects. Artists in such partnerships can challenge stereotypes, change attitudes and enable seeing in new ways. IS researchers could explore how artists and digital art enables such re-conceptualisations.

Artists also work with disadvantaged communities, transferring their skills, initiating and supporting local communities, establishing artistic practices in outlying areas, supporting people in producing something unique to them and enabling integration of the arts into a

hitherto excluded part of the population. Working as a virtual reality artist with 3D and digital manipulation software led Maggie Parker, for example, to implement and deliver a course in the community on digital manipulation. She taught the participants how to scan, cut and paste, move objects from one image to another, and use software tools to make art (Parker, 2004). The course generated an enormous amount of interest and publicity, and disparate parts of a scattered community closer together, forging links with various other groups and encouraging creativity, self esteem and confidence. At the end of the course, the participants' enthusiasm inspired the curation of an exhibition entitled 'IT doesn't have to make sense', a comment by one of the students that came as a bolt of lightening to her development. This exhibition led to further courses being implemented, introducing digital manipulation into other community centres, and a realisation that digital photography and art may be the next logical step for community interaction (Parker, 2004).

Whatever its ultimate significance proves to be, we argue that digital art is another example of the use of ICTs to display and communicate information to others, in participation with others, and hence should be studied by IS researchers.

DIGITAL ART RESEARCH

As history has shown, there has always been huge potential for advances in the knowledge and understanding of creative practice through the production of artefacts created via new processes. As we enter the 21st Century, the impact of digital communication on individuals and society, and its output through new manufacturing techniques, provides opportunities that define new relationships, not only of the maker to technique but also to idea, result and ultimately the viewer or end-user of digital art.

Digital art research is receiving increasing attention in universities. For example, the Creativity and Cognition Research Studios at Loughborough University has hosted a number of artist-in-residence projects where artists and computer technologists have collaborated on projects. Researchers have, in parallel, investigated the creative process (Candy & Edmonds, 2002).

In the UK the RAE forces artists of all types (music, drama, visual arts etc) in academic departments to re-define their creativity or performance as research. Hence we increasingly see debates about 'performance as research' and 'practice-based research' (UKCGE, 2001). Some have criticised the term 'practice', which is really inherent in all disciplines (UKCGE, 2001), but no better term has yet been agreed to express the idea that this type of research involves creativity and performance, not only documentary study or gathering empirical data as in other subjects.

Alongside the RAE 'push' is a 'pull' for art as research: increasingly some artists want to gain a PhD. Conversations with such research students reveal their reasons include:

- A desire for the recognition or kudos that a PhD brings, rather than being labelled, perhaps somewhat sneeringly, as 'self-taught'.
- After completion of a BA degree in a creative arts discipline, a desire to study further.
- A wish to find employment in academia (there is rarely a salary or pension for artists), for which a PhD may be necessary.
- Wanting to be part of a community of scholars rather than an isolated artist, with opportunities for sharing and exposing their work to others with knowledge of the subject.
-

Typically a PhD submission in a creative arts subject includes a performance and/or corpus of creative work, plus a dissertation which elaborates the process of development and analyses and contextualises the work as a contribution to knowledge. The creative work and dissertation must be examined as an integrated whole, and the dissertation should not just 'justify' the practice, but define a critical and intellectual perspective (UKCGE, 2001). For example, the University of Teesside in the UK recognises as suitable for PhD a research programme where "the candidate's own creative work forms, as a point of origin or reference, a significant part of the intellectual enquiry." The PhD thesis must place this creative work within its art history or art criticism context. The creative work can be in any field, "... for instance, fine art, design, engineering and technology…" (Which therefore includes computer-based or computer-supported art) and the final submission must include some permanent record of the creative work (Teesside, 2002). Some institutions require that examiners do not just read the dissertation, but also attend the candidate's performance or visit the candidate's exhibition.

However, this model of research is still the subject of debate: its nature and underlying philosophy, its equivalence to traditional research and the problems in documenting performance (Piccini, 2002). We note, however, the similarities of practice-based research to action research; an approach known already to many IS researchers. Action research involves an iterative cycle of plan-act-reflect, with attention to both the process and the outcome (R. Baskerville, 1999; R. Baskerville & Wood-Harper, 1998; R. L. Baskerville & Wood-Harper, 1996; Davison, Martinsons, & Kock, 2004; Lau, 1999). Digital art research involves a similar cycle of planning, acting and reflecting, with the focus on both process and product. We therefore hope that IS researchers and reviewers will readily appreciate the nature of digital art research.

Digital art research students can be based within a university's fine art department, but increasingly they are found in a university's computing department since this is more likely to have the necessary technology and technical support. Moreover, computing departments are increasingly offering BAs and MAs in the creative aspects of computers and multimedia, so it is natural for students coming off these courses to continue within their current department. It would also be possible to have digital art research within a university's business school – if organisations start to recognise the business value of art-based research.

REFLECTIONS ON EXPERIENCE

In this section we reflect on some lessons learned from personal experience – one of the authors is currently undertaking a digital art-based PhD in a computing department in a UK university. Many of the difficulties identified stem from a difference in culture, between those in a conventional computing or IS research paradigm, and those immersed in creative art practice. The lessons may be useful for others contemplating doing a digital art-based PhD or offering the facility of undertaking one in their department.

Biased PhD process

We have found that the established PhD procedures are biased towards words and can inhibit the artistic process. A PhD candidate is required to submit a registration document, an MPhil/PhD transfer report and a final thesis, as well as annual progress reports. Each of these is primarily assembled from words, yet an artist works mainly with images or sounds. This can cause stress for the PhD student, who has to create works in what is, for her, an unnatural, alien medium. Where a social sciences or IS research student expresses her ideas in words, a digital art research expresses hers in images or sound, but must then re-express them in words. There is thus an additional burden on digital art researchers.

Practice-based researchers have reported that the need for the frequent production of word-based reports gets in the way of creating art, leading to fears that only inferior art or insufficient artworks will be made (Hockey, 1999). It has been argued that there are multiple types of intelligence, and education tends to favour those with strong 'linguistic intelligence' - the ability to effectively use language to express oneself rhetorically or poetically; and as a means to remember information – over those with better 'visual-spatial intelligence' or 'musical intelligence' (Gardner, 1993). Universities offering digital art PhDs may need to place less emphasis on producing a large body of written text and more emphasis on the art creation and production process.

There can also be a conflict between the artist's and the assessors' mode of working. One is accustomed to images or sound, the other to words. Of course, examiners could be drawn from those who are themselves artists. However, because there are comparatively few artists with PhDs, there is only a small pool from which to draw examiners. Universities may have to change their regulations, to allow established artists without PhDs to examine PhD candidates in digital art research. And since, for many computing departments, digital art research is relatively new, there are few internal assessors with a digital art background who can assess the candidate's progress through the years leading up to submission of the thesis.

Challenge to existing modes of thinking and discourse

Traditionally computing has been seen as logical and rational, and so appeals to those who enjoy logic and rationality. 'Logical-mathematical intelligence' is the capacity to analyse problems logically, carry out mathematical operations, and investigate issues scientifically (Gardner, 1993) – a highly developed skill in many computing academics. However, this can clash with many artists' modes of thinking and discourse, who freely speak of their work in terms of love, emotion and engagement.

Artists naturally write in the first person about their research process. Many conventional researchers, however, eschew such a style, and prefer the third person passive, and an objective mode of writing. It is true to say that the need to write from a subjective viewpoint is recognised by IS researchers in the interpretive and critical research paradigms. However, these paradigms are not yet well-established in IS, and are little known in such disciplines a computer science or software engineering. Even IS researchers accustomed to confessional accounts may baulk at the degree of self-revealing customarily displayed by art researchers.

There can also be a culture clash concerning the focus of research. The focus for computing researchers is on producing a computer-based solution to a problem, and that solution will be bug-free and reliable. For digital art researchers, on the other hand, the focus is on the process of exploration – a journey that can take a lifetime – and high reliability may not be essential.

Some researchers may not appreciate the skill required in making a piece of artwork and investigating the process of creation. Just as artists have been expected to acquire the transferable skills of literacy, numeracy and IT, so non-artists may need to broaden their education to include visual and aural skills.

Collaboration with technical staff

Digital art researchers require close collaboration with technical support staff, to help them use ICTS effectively. They may require specialized tools, such as scanners and graphics tablets, and will probably require more electronic storage space than that normally required by other researchers.

The collaboration required with technical staff goes beyond providing hardware and a telephone helpline when an artist can't make the software do what she wants. Artists and technicians often need to produce an artwork together, combining their individual expertise in the creative process. Previous research has focused on how artists and technologists can productively collaborate (Candy & Edmonds, 2002). The core problem is that of overcoming the specialised language found within the artists' and technicians' background disciplines. It has been observed that successful collaborations seem to arise when artists are able to use and communicate *via* the technological. When working together with the technician and the technology, artists can push beyond the circumscribed solutions offered by many applications and begin working with the technology in such a way that it approaches their notions of 'truth to materials'. Artists working in this way often also have insights into the implications of using technology and software in particular ways - often ways that have never been thought of by the software developers. This then becomes a source of dialogue and the means to develop a common agenda and goal between collaborators.

Research environment

Since there are comparatively few digital art researchers so far, they can feel isolated. Here, however, ICTs can help: they enable digital artists to access existing networks of like-minded people, or to create their own networks (Nichols, 2003). In the United Kingdom, the art school tradition of design education embodies the constructivist paradigm (Guba, 1990) of problem-based "learning through doing". Students are encouraged to ask the question: "What happens if I do this?" and, at the same time as learning to make and learning how things are made, experience for themselves the act and art of "making to learn" (Kimbell et al, 1990). Artists work within a studio environment, where tutors and fellow artists regularly critique their work. Computing departments, on the other hand, have tended to educate undergraduate students via computer labs, where each student works on the same programming tasks. Although there is recognition that creation of an IT artefact involves 'learning through making' (Vaishnavi & Kuechler, 2004), that learning process is often a private pursuit, not subject to the frequent, often harsh, criticism of tutors and fellow students found in an art studio. Computing departments wishing to offer facilities for digital art may therefore need to re-design their labs and lab practices to copy art studios and so generate a more appropriate research environment.

CONCLUSIONS

In this paper we have argued that digital art should be seen as a branch of the information systems discipline. We have given an overview of the nature of digital art and the demand for digital art research, and discussed some personal experiences of undertaking digital art research in a computing department.

We indicated a culture clash between technological, solution-oriented personnel and creative, possibility-oriented digital artists. If some in the IS discipline agree with us that digital art research is a legitimate branch of it, we anticipate further culture clashes. Those accustomed to concentrating on how information systems can make management more efficient, effective or dominant will need to appreciate alternative IS research where business managers are not seen as the relevant focus. Similarly those focused on problem-solving and the development of bug-free systems will need to appreciate that others are focused on exploration, potentials and aesthetic criteria.

In this paper we could only scratch the surface of the possibilities of digital art research. We hope that we have sparked some researchers' interest, and look forward to seeing more papers on digital art in the IS literature.

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Appendix viii

K: EVA Conference

British Computer Society, London 2008

“Haute Couture, Haute Cuisine, Haute Games”

HAUTE COUTURE, HAUTE CUISINE, HAUTE GAMES

Maggie Parker
School of Computing
University of Teesside
Borough Road
Middlesbrough UK
m.parker@tees.ac.uk

Clive Fencott
School of Computing
University of Teesside
Borough Road
Middlesbrough UK
p.c.fencott@tees.ac.uk

Paul van-Schaik
School of Social Sciences
and Law
University of Teesside
Borough Road
Middlesbrough UK
P.Van-Schaik@tees.ac.uk

Abstract

Computer games provide a unique opportunity to experience intangible fantasies and create engagement with emotions which are able to be played out in real-life. Artists speak of engagement, computer game players speak of transformation and immersion. They are all viewing images with their own personal narratives informing their participation. These personal narratives arise from the information provided by the participant's self and self-identity. Artists and game players are modding games to suit their own purposes, creating new types of 'Haute Games' in a similar style to 'Haute Cuisine' or 'Haute Couture'. The importance of alternative computer game genres allowing personal blendings for game players has been investigated and identified.

1 INTRODUCTION

All ideas must stem from somewhere and fine artists have the passion of their work to generate ideas. Game developers speak constantly of how they love playing games and also how they love creating them. In the creative industries, passion and love are spoken of often. However, for many people computer games = youth and violence. These people who could become game players felt excluded from playing games. This raised the question of what other methods could be used to interact with game-players. When playing computer games, players can command armies, rule worlds, and change identities. Players can navigate through unfamiliar territory, shoot, maim and kill 'people', build cities and solve puzzles. They can change identities, for example when playing 'Sims' or 'Fable' or 'World of Warcraft' players can become alternative genders or creatures inhabiting these virtual worlds, but games can be used to do and create other meanings.

1.1 Haute Games

The following games discussed in this section are games that have been categorised as 'Haute Games'. These games are the ones that 'take risks' These games can investigate, highlight and create new and alternative game genres by taking risks, which is something artists know intimately and live with every day. In art every piece of art-work placed for public viewing is a risk, for example the risk of exposing something the artist wishes to conceal-revealing a part of the artists' self, for example when making a self-portrait. There is also the risk of ridicule, for example at the showing of 'Impression', critics described the show as "painting created in a state of delirium tremens" and the risk of hatred, for example Marcus Harvey's 'Myra' the giant reproduction of the newspaper image of Myra Hindley constructed with children's hand prints. Artists take many different kinds of risk. Creativity should be allowed to be 'risky' and artists have the training to facilitate these risks which can instigate and investigate unconventional perspectives. These 'risks' or 'experiments' could have the same impact on the game industry as 'Impression' did to the art world, raising the perception of players and

allowing multiplicities of engagement with games. Opening up new possibilities of innovative self-interaction between computer games and their players, allows new opportunities to access different areas of narrative interaction, allowing connection to players' emotions to create alternative 'self-blendings'.

Tetsuya Mizuguchi, game developer, created the game "Rez", (Sonic Team Sega, 2001) [15] whose aesthetic levels were derived from the synaesthesia school of artists, painters, and composers, and the painterly aesthetic of Kandinsky.

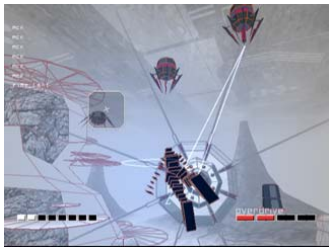

Figure 1Rez images

When playing "Rez" the player is immersed into an abstract patterning of sounds, visual images, brilliant colours, and abstract designs which are linked to music as seen in Figure 1. Katamari Damacy, illustrated in Figures 2 & 3, is also another innovative game where the surreal concept is a real think-outside-the-box game genre.

Figure 2 Katamari 'clumps

Figure 3Katamari 'clumps'

When players start the game, they are given a katamari (which roughly translates to "clump" in Japanese) not much bigger than the player. "You roll this around, collecting anything you can to increase its size, (Davis, 2006) [2] There are certain constellations that require a katamari to be built out of specific stuff that corresponds to the shape of the constellation. For example, Pisces requires the player to collect a number of fish, while players need to find the biggest bear that they can to create Ursa Major. DaviesHe continued "[Players] go from "rolling along a tabletop to ravaging through city streets, picking up momentum and skyscrapers along the way." The disparity of the game of Katamari Damacy nevertheless has similarities with the artist Dew Harrison's 'StarGlass' a screen grab of part of which is shown in Figure 4 Originally intended as an interactive art piece, this 'art' or 'game' shows how user engagement was encouraged through means other than those usually employed in games.

Figure 4 Virgoan stars (pinkish), the 3 smaller stars (bluish, on left)

and a Duchampian object (Étant Donnés) Dew Harrison

Harrison argued “You could say that the aim of this computer game is to make sense of it through exploration, the strategy is the semantic association of the multimedia objects within it, as presented in the initial vision for the ‘all-purpose machine’ to augment human thinking – the computer.” (Harrison & Parker 2006) [4]

Another game in these alternative haute game models is ‘Madrid’. This game was created in response to the September 11th attacks to New York and the USA in response to the futility of war and terrorism. 'Madrid' (Newsgaming.com, 2004) [9] is a form of digital meditation: the player is invited to brighten candles in memory of victims of terrorist attacks all over the world; the player has to re-light the candles as they go out. As the player finds it is impossible to get all the candles re-ignited for the whole of the game scene, it is a metaphor commenting on the futility of war as shown in Figures 5 & 6.

Figure 5 ‘Madrid’

Figure 6 ‘Madrid’

1.2 Haute

Haute means elegant or high, couture means dressmaking, sewing, or needlework and so the two combined imply excellent artistry, experimentation and investigation with the fashioning of garments. In this paper I argue that this is comparable to artists producing fine art pieces which investigate alternative interactions, for example Rachel Whiteread’s use of cement to create art-pieces, instead of being used to construct buildings, or Jackson Pollock experimenting with paint in an abstract manner, or computer games producing alternative methods of interaction, immersion and blendings with players self and self-identity. Haute couture may be unattainable to the general clothes buyer, but-by 'selling a dream'-fashion shows attract huge media attention and gain enormous publicity for the couture houses. They are important to the rest of the industry for the innovative ideas its designers produce. Other firms may copy these designs and re-produce them at smaller cost to the buyer, but the ideas are created in the haute couture market. Similarly for Haute Cuisine ‘super-chefs’ are producing complicated food with lots of process which would not be created by a normal person, but the fact that chefs produce these dishes becomes disseminated into our cultural awareness, affording us the possibility of creating-maybe not the original dish-but a simpler version of it, for example Delia Smith’s use of ready-made meals. These industries sell a dream of the intangible as does the game industry, a dream of entering into a fantasy land of ‘Haute’ levels. Haute games allow the dissemination of ideas throughout the game industry, and produce ideas and alternative games-games most game developers do not have the time, money or ideas to implement.

1.3 Strange Spaces

Haute games created by artists set up situations to evoke emotional responses from viewers, relating philosophy and theories, utilising and facilitating personal intuition and rigorous perception to create pieces of work. These theories are endorsed in the work and in the production of the art work by construction, response and relation. Artists open our eyes to new ways to see. For example, the impressionists created new ways to look at paint, Duchamp created connections to investigate 3 and 4-dimensions in space and the writings of Bachelard spanned science, poetry and human consciousness. These unconventional syntheses of perspectives recognise the creativity of the human mind. When playing computer games and concentrating solely on the game play, are we losing part of our sense of self and blending with the game narrative, becoming 'another self'? Placing ourselves within the game space and combining with the game as we do when viewing a piece of art work, we become immersed in the object and surrender part of our self-identity to the object, inhabiting the internal self which the artist projects from their internal 'strange space' into the external world as shown in Figure 7.

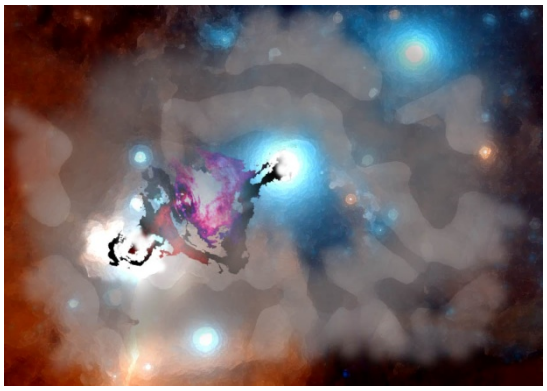

Figure 7 'Strange Space' digital image Maggie Parker 2007

2 Game Modding

What can happen when artists are given software tools and packages to 'play' with, play here meaning experimentation with models and materials? Artists can subvert software by 'modding' game levels, exploring and manipulating and blending different elements of the game play shell. They can explore materials, the artist changing a functional or aesthetic element in an existing game shell or in existing coding, creating their own version of how that coding will be displayed to create their own versions of 'games' to play as shown in Figure 8. JoDi's SOD is a modification of the game Wolfenstein. You can actually attempt to play the game, but everything is scrambled.

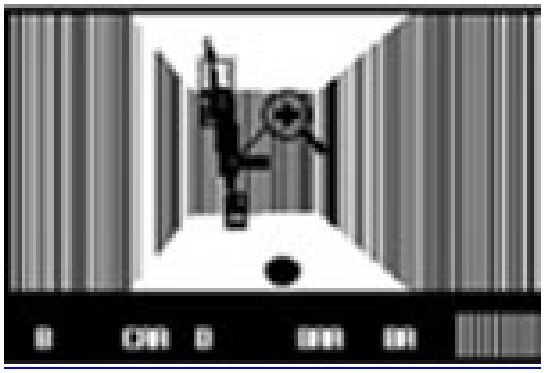

Figure 8 JoDI:SOD

2.1 Star World

If games are being connected by the popular media with violence, could they also not be connected with a gentler engagement with game play? Playing a computer game which blends with players' emotions to engage and interact in a gentle, protective and peaceful environment scenario could become as commonplace as playing beat 'em up', shoot 'em up games. Building on this history of genre-breaking haute games, I assembled an interactive computer game environment, Star World. This was developed to begin both an artistic and empirical investigation to create an alternative space in order to investigate whether creating a seductive, non-threatening environment would induce players to engage in an abstract space with abstract objects creating their own narrative?

2.2 System Design

In this 'veduta ideata', Star World became an idealised view based on an actual situation by adding entirely fictive elements and landscapes and illustrate 'ideal' spaces as practiced by architects such as Andrea Palladio (1570). [11] The environment consists of a realistically conceived scene that contains wholly imaginary elements. Star maps are textured onto a displacement-mapped twig landscape, producing stars wrapped around the bark of trees. Handmade paper scanned in and reproduced digitally becomes a rotating inner sphere, a real-world item transformed into a mythical landscape. Slow-moving animations create a hypnotic feast for the eyes; the stuff in the digital landscape may not exist, but the spirit of the artefacts exists in the space. All real-world objects have a surface texture, which is the surface roughness-not the surface colour or pattern which is especially important for close up shots. In a real world space this is an expected reaction to surface texture, however, in Star World; textures are placed in unexpected configurations and not re-created as real world textures as shown in Figure 9.

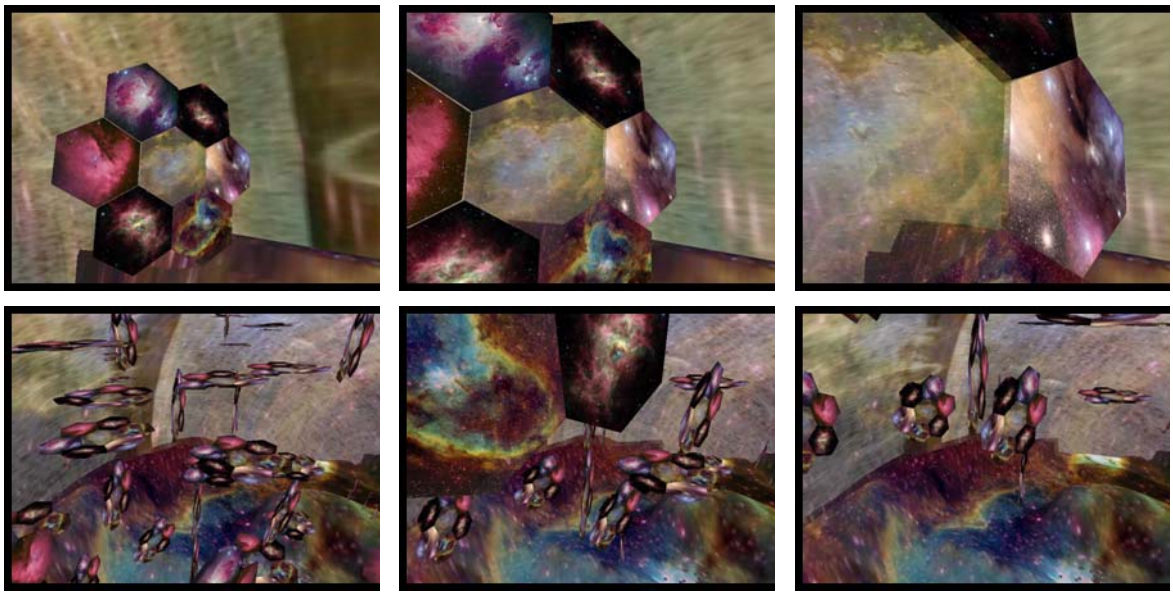

Figure 9 ‘Star World’ environment-game screenshots

This environment-or-game was exhibited in art spaces, conferences, and computer exhibitions. I observed viewers engaging with the piece seemed to dissolve, engage and ‘blend’ with environment once they realised there was nothing threatening to encounter and defeat. They enjoyed the time to ‘chill-out’ in a non-threatening environment. Viewers/players were much more engaged and not in an alert state as computer gamers naturally are in order to shoot anything that threatens them or to deal with a situation initiated via game-play to keep them ‘alert and ready to defend’. (Eladahri, 2004) [3] Some viewers/players also reported that even though they had not had much experience in navigating computer games, they quickly mastered the controls and were able to navigate around the environment with the minimum of training. Easier methods of navigating a computer game environment created within navigators of the environment, a confidence in their skill level. Participants reported “I was really scared of computer games before, but if your environment is where I could begin to learn to play them then I would play more games”. (Parker, 2005) [12]

3 Responses to Star World

As well as an art piece, Star World became an empirical test-bed. Participants were invited to navigate Star World and describe their experiences. They were asked to imagine how they would describe Star World to someone who had never navigated the environment and to remember what they felt, this retrospective ‘think-aloud’ teach-back (van de Veer, 1990) [17] generated protocols for the exploration of Star World. The protocols were transcribed and examined to see if themes could be identified. Each transcript was analysed in terms of themes which emerged from the spoken words of the participants as shown in Table 1.

Table 1 Themes from teach-back task

Themes	Number of Themes
Movement	471
Emotions	265
Environment	210
Abstract Objects	164
Verbs	117
Colours	84
Abstract Concepts	67
Sounds	61
Relaxation	24

The highest word count (471 words) related to movement. This can be related to this author's observation that, when observing players, game players wanted to 'run' everywhere in a game, thus creating 'exploration at super speed.' Even just watching game players play at this speed was not relaxing at all, so this author wanted movement through Star World to be slow and relaxing with no 'gamers' run' allowed, all movement taking place at a gentle 'waft and flow' throughout the navigation. (Csikszentmihalyi, 1996) [1] The quantity of words relating to movement seems to suggest the environment was built in such a way as to be a pleasant place to engage with. "As Ramachandran (2003) [14] hypothesised, "Every partial glimpse has to be pleasing enough to prompt further visual search, in other words the wiring of your visual centres to your emotional centres ensures that the very act of searching for the solution is pleasing."

3.1 Emotions

Participants' emotions (265 mentions recorded) ranged through both positive and negative, for example from annoyance (7 recorded) to enjoyment (12 recorded). Participant 1 said they were most frustrated with the actual navigation controls which were the mouse and cursor key controls. "I was annoyed because I didn't get anywhere-got to get somewhere". Only two participants reported feeling frustrated with the actual environment. Both participants who mentioned this were game-players and the author hypothesises game-players were used to a surge in adrenalin and did not get the 'rush' or 'buzz' they connected with game playing as the controls to navigate were set at a steady speed and could not be adjusted. Therefore, they became frustrated with this lack of control.

3.2 Abstract Objects

Participants identified in various ways the hexagon objects placed in the environment, naming them as hexagons, birds, geese, space ships, fifty-pence pieces and others. In total the hexagons had 29 differing descriptions. "Looked like a woman sitting or a statuette sitting on a seashore" "I thought the birds were flying in a flock like jet rangers to blast you out of the sky but there was no interaction" "I saw the goblets…..I wanted to explore them". "Probing the willing suspension of self-identity and the willing suspension of disbelief is leading to experimenting within the aware and the unaware, presence and immersion happenings taking place between cyberspace and the 'real time' person inhabiting the space or operating the equipment". (Parker, et al., 2005) [13] Participants were unaware of what the abstract shapes actually were and as such 'named' them. Creating a narrative with objects, bringing them into a field of expertise and knowing and naming the object created within the viewer a power to believe they could give their opinion, achieve ownership and become the temporary possessors of the object.

3.3 Blending

One of the many interesting narratives [or codes] generated by participants was their interpretation of the abstract shapes "I reached the duck or geese shapes in the sky" although there were no such shapes in the environment or any shapes intended to represent these concepts. These results of the description of abstract shapes were usually in line with a participant's interests. This participant did describe her hobby as bird-watching. Another participant, who interpreted the shapes as "seaweed, shells and tadpoles", went for long walks on the beach to relax, and named the abstract shapes according to objects that were familiar to her. This relation to each participant's hobbies is significant, not in a scientific logical measurable method, but in identifying, engaging

and transforming abstract shapes into something each participant could rationalise to create a personal, emotional, self-blend and connection. Abstract objects will often have connotations or meanings which come from within our own culture and society. These can sometimes be recognised consciously, but at other times are only apparent when we look for them. Artists are constantly engaging with and noticing these connotations, and cracking these cultural codes becomes part of art practice. Because Star World was constructed using abstract pieces, these pieces became attractors, these in turn activated participants strange space to project onto these abstract pieces their own personal schema and could interpret the imagery in a personal way, allowing a blending and engagement with a virtual environment in a way previously unexplored. To win and solve puzzles is normally the reason to play many games. However "There is nothing about the microprocessor or the monitor that requires games to be about shooting aliens or searching for treasure" (Adams, 2001), unexplored by many developers are the many possibilities that games can have to allow alternative outcomes to a game. Stafford, (2007) [16] argues for a new understanding of images, not simply as products of mental operations but as "constitutive cognitive processes". She discusses the puzzle of "binding", the process this author has termed "blending" which we both argue "make visible the invisible ordering of the human consciousness". In calling for art, science, philosophy, and technology to become a single investigation, she is asking for what some artists do as a matter of course when pursuing their work.

3.4 Relaxation

One of the intentions of creating Star World was to investigate the possibility of using virtual environments and computer-games to help alleviate stress, one of the reasons for loss of work time and heart disease (North, 2008). [10] Three participants thought the animation of the hexagons and the animation of the inside sphere was relaxing, 8 participants thought sound added to the notion of relaxation. One participant thought "the sound of the sea" helped to relax them. Nine participants thought movement was relaxing. One participant thought the experience was "pretty…and relaxing", another participant said they enjoyed "just sitting here watching…very relaxing". One participant thought the colours were relaxing, "colours...calming sound…relaxing…quite enjoyed it". This participant also observed that "just sitting here watching…very relaxing". Another participant said "I was uneasy with the floating goblets, why are they floating in the sky-but I didn't feel threatened at all and now I feel relaxed." Two participants thought they did not think they were relaxed and said they "Don't feel relaxed but was not relaxed before". Another participant said "gloomy depressing colours made me tired, not relaxing". Overall, when navigating Star World, relaxation was mentioned 24 times by 23 out of the 28 participants in the study, and when shown in alternative art spaces, for example the Department for Fundamental Physics at the University of Durham, people who navigated the environment mentioned similar experiences. Harrison & Parker explained Star World was intended as a stress free game environment for players who want to relax in their leisure time. This game uses visual aesthetics, often abstract and painterly, it extends game design into something that could easily be situated in an art space and begs the question "Why aren't creative games shown in white cube galleries?"

4 Conclusion

Game environments offer an alternative way of 'viewing' images contained within a monitor or TV screen. Works of art are cognitive devices aimed at the production of rich cognitive effects. Thus it can be argued, in the light of what is known about human

cognition, that aesthetic experience is a by-product of the exercise of more fundamental cognitive faculties such as perception, imagination, and returning to the introduction in this paper-love and seduction. Works of art are never grasped directly. Rather, in an aesthetic experience, a subject directly perceives a certain object or event (a canvas, a display of pixels, a series of sounds), and this perception gives rise to a cognitive activity of a special, aesthetic type. Abstract shapes were included in Star World and these visual clues became maps onto which participants mapped their own self-identity and narrative which allowed participants to blend with an abstract illogical world. As discussed by Lackoff & Johnson (1980 & 1987) [7] [8] these abstract objects required participants to engage and apply their personal image schemata causing them to make connections, or blendings with to what they were viewing. This interaction took place in and throughout the time of navigation of Star World. As participants navigated the environment, they created "multi-modal patterns of experience, not simply visual". If, as he argues, "all our symbolic expression and interaction are tied intimately to our embodiment and to the pervasive aesthetic characteristics of all experience", then Star World tapped into that multi-modal experience. For example the experience of one participant “I reached the duck or geese shapes in the sky” when her hobby was bird watching. This seems to support Johnson's argument (1999) [6] that "aesthetic aspects of experience structure every dimension of our experience and understanding". More generally, players’ positive response to their experience, whether in terms of flow (Hsu & Lu, 2004) [5] or otherwise, can lead to a higher acceptance of a game and ultimately higher success in the market of games. One important contribution of this investigation has highlighted the need for alternative computer-game designs, computer-games which relate and respond to different player-emotions and types. Another important contribution was the integration-or-blending of dissimilar fields and practices which prove a synthesis can be achieved, and methods and practices can be used to create alternative processes.

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